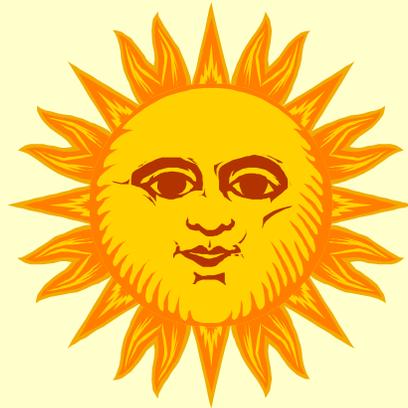


***May 20 CAA-TF - Part 2 - Technical Slides
(with added title and color key updates and
enlarged images of ozone impact)***

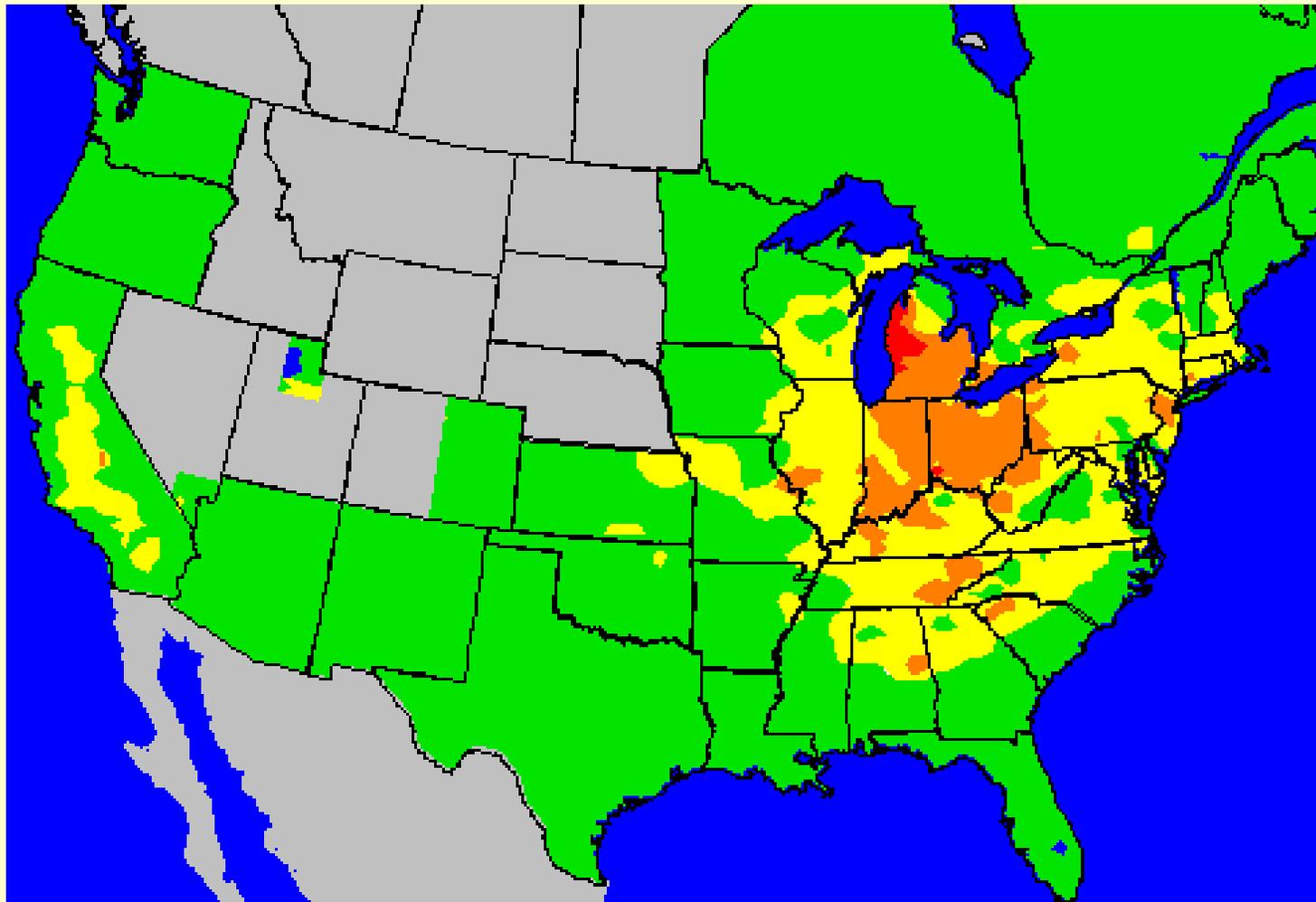


Visualizing the ozone problem....

...and looking at the indicators.

***Visualizing the ozone problem and
typical episode conditions....***

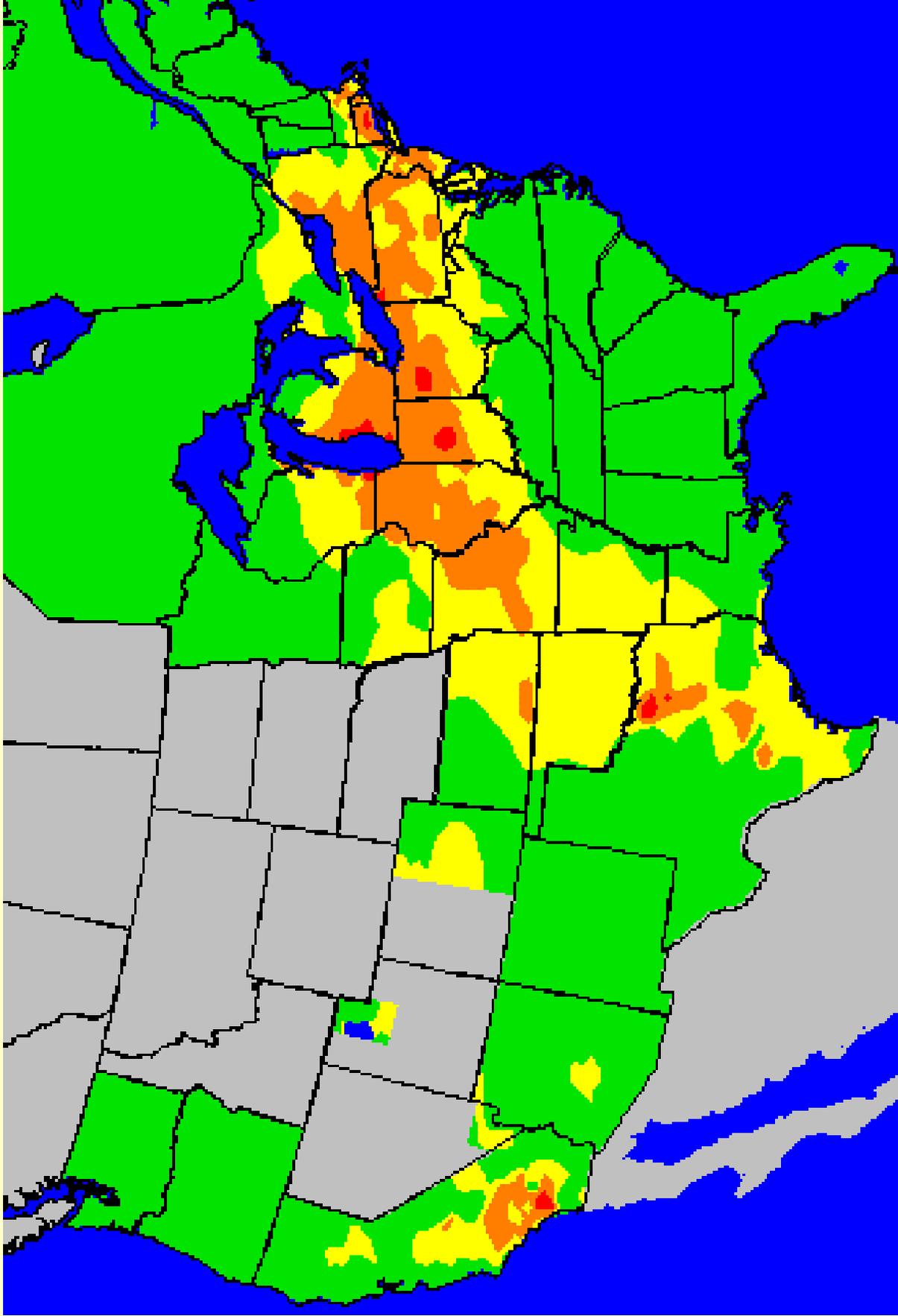
**[a series of Ozone Day Maps and LADCO/Midwest RPO technical
field study information regarding regional ozone and its formation]**



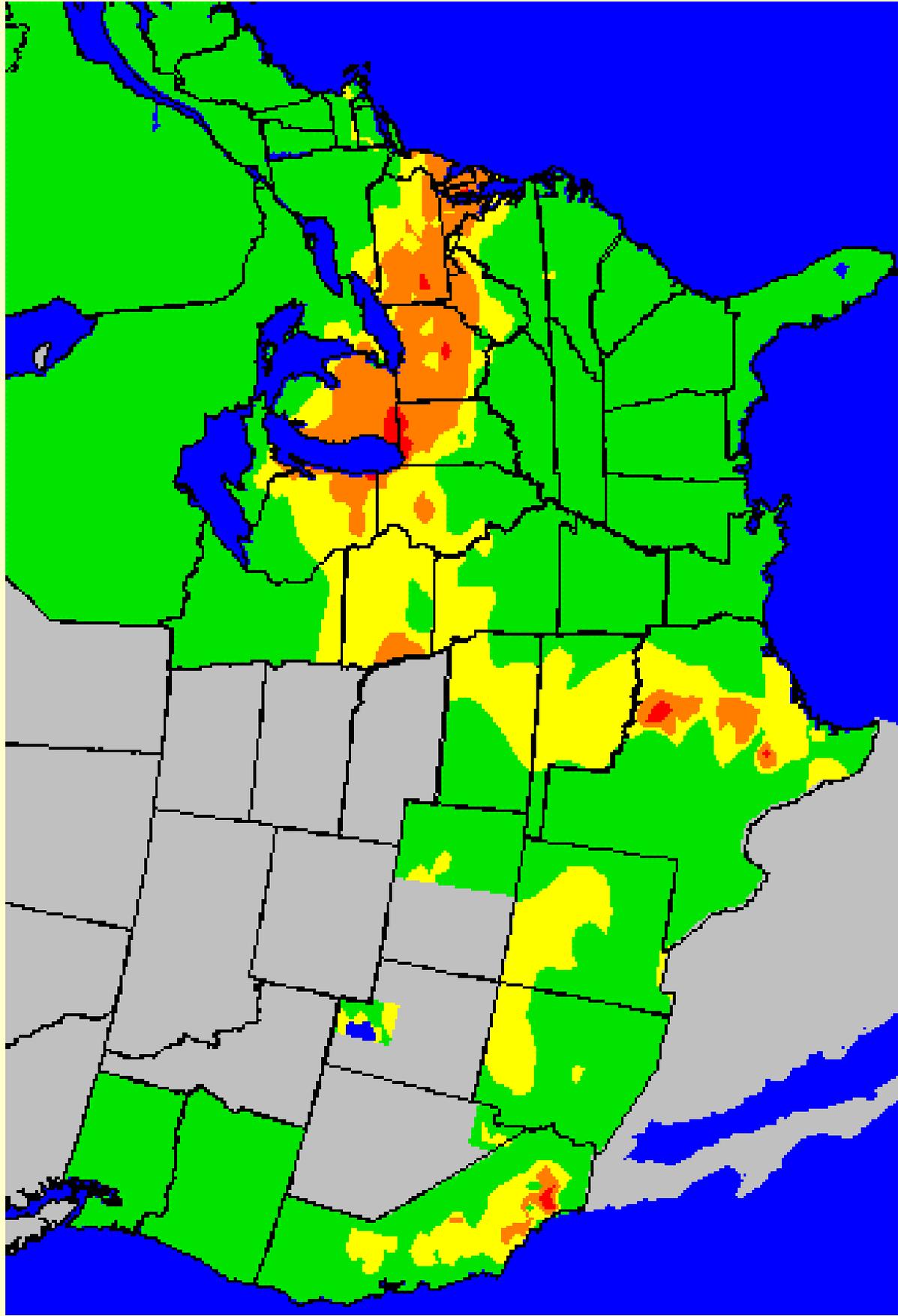
June 20, 2002

EPA AIRNOW sample plot - max daily 8-hr ozone - June, 2002.....Green=up to 64 ppb, Yellow=65-84 ppb, Brown=85-104 ppb, Red=105-125ppb

Air Quality	AQI	Ozone Concentration (ppm) 8-hour	Ozone Concentration (ppm) 1-hour
Good	0 to 50	0.0 to 0.064	-
Moderate	51 to 100	0.065 to 0.084	-
Unhealthy – Sensitive Groups* Marginal & Moderate Subpart 2 Equivalent	101 to 150	0.085 to 0.104	0.125 to 0.164
Unhealthy – Serious and Severe Subpart 2 Equivalent	151 to 200	0.105 to 0.124	0.165 to 0.204
Very Unhealthy	201 to 300	0.125 to 0.374	0.205 to 0.404

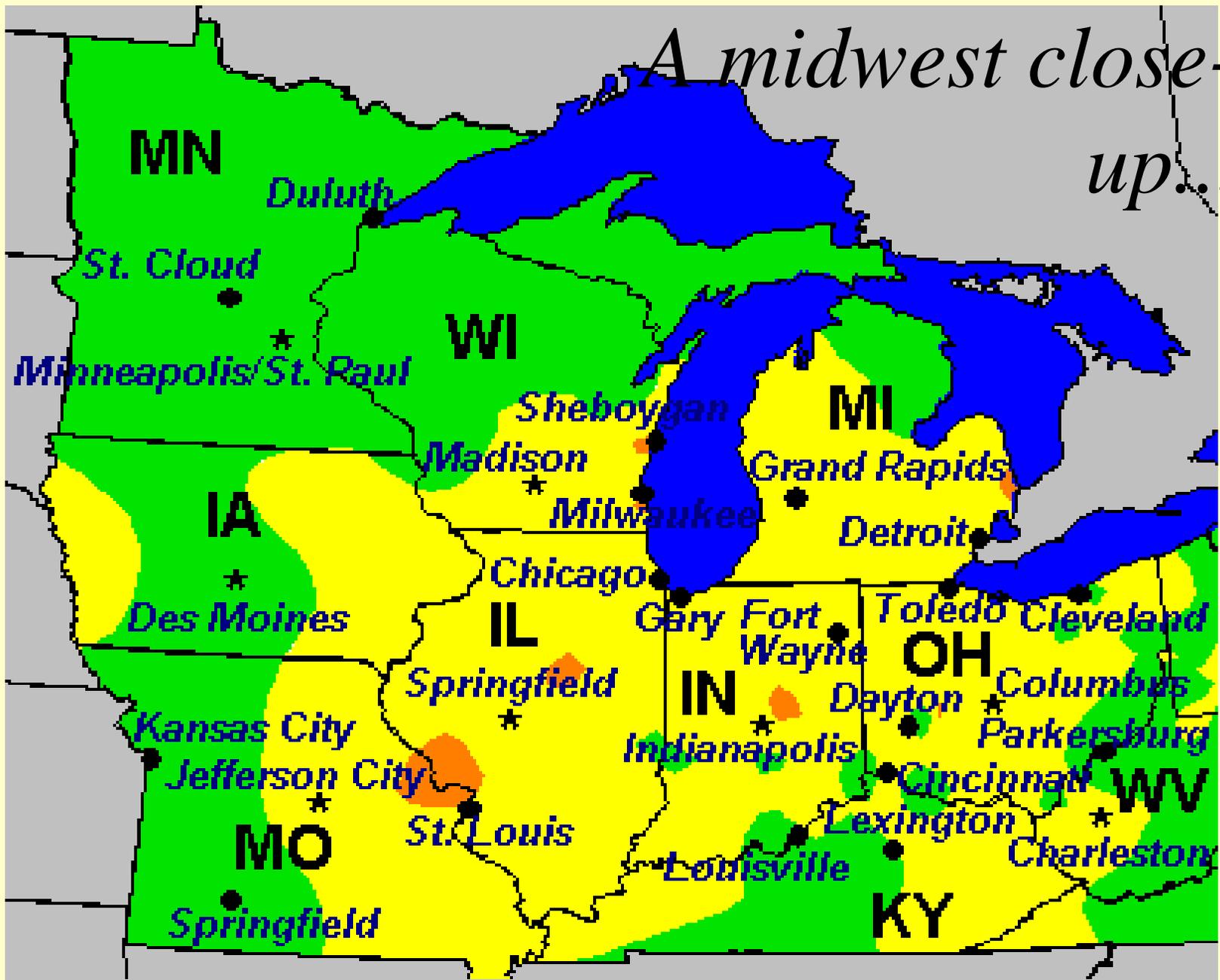


June 23, 2002

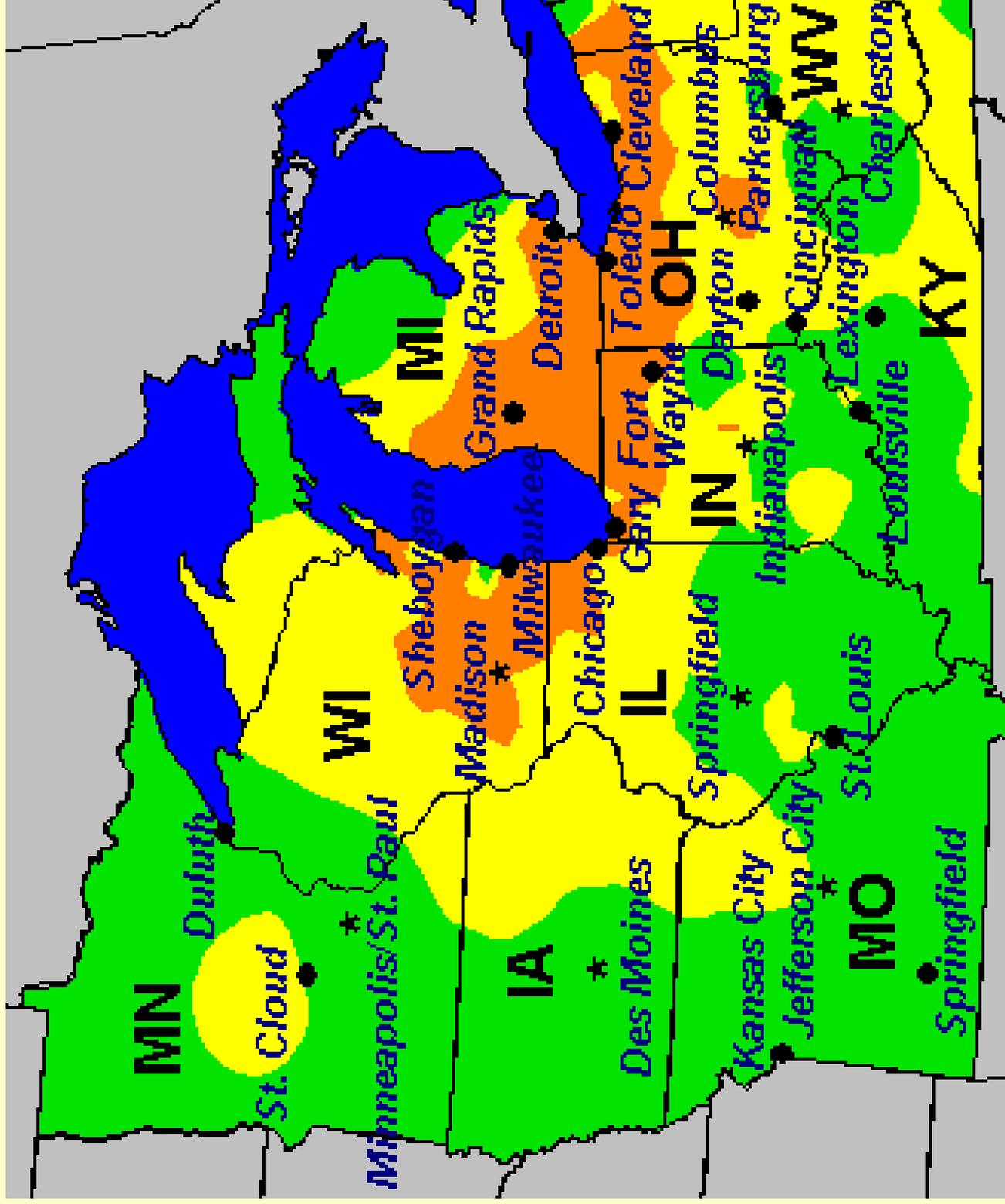


June 24, 2002

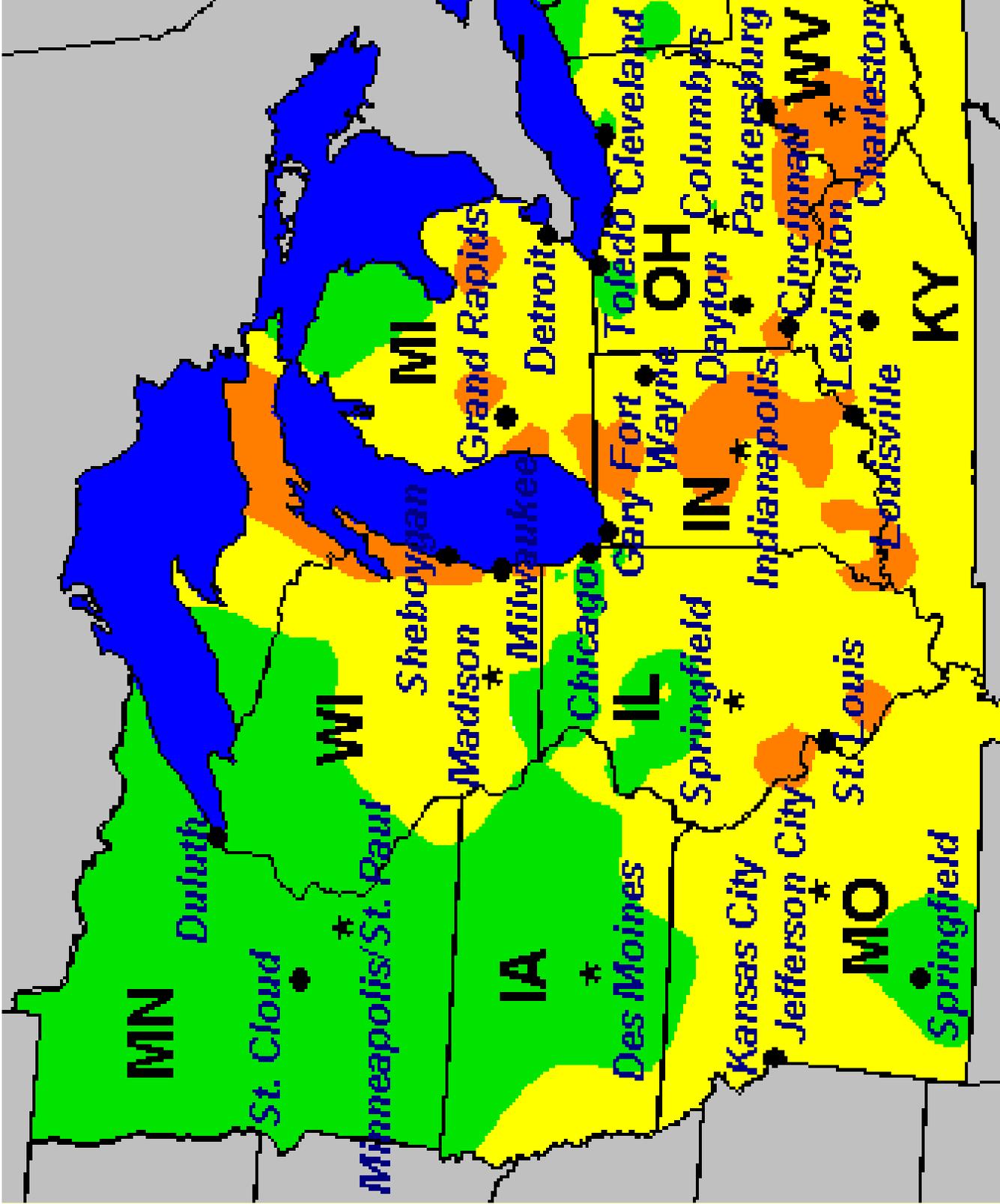
A midwest close-up...



June 8, 2002



June 9, 2002

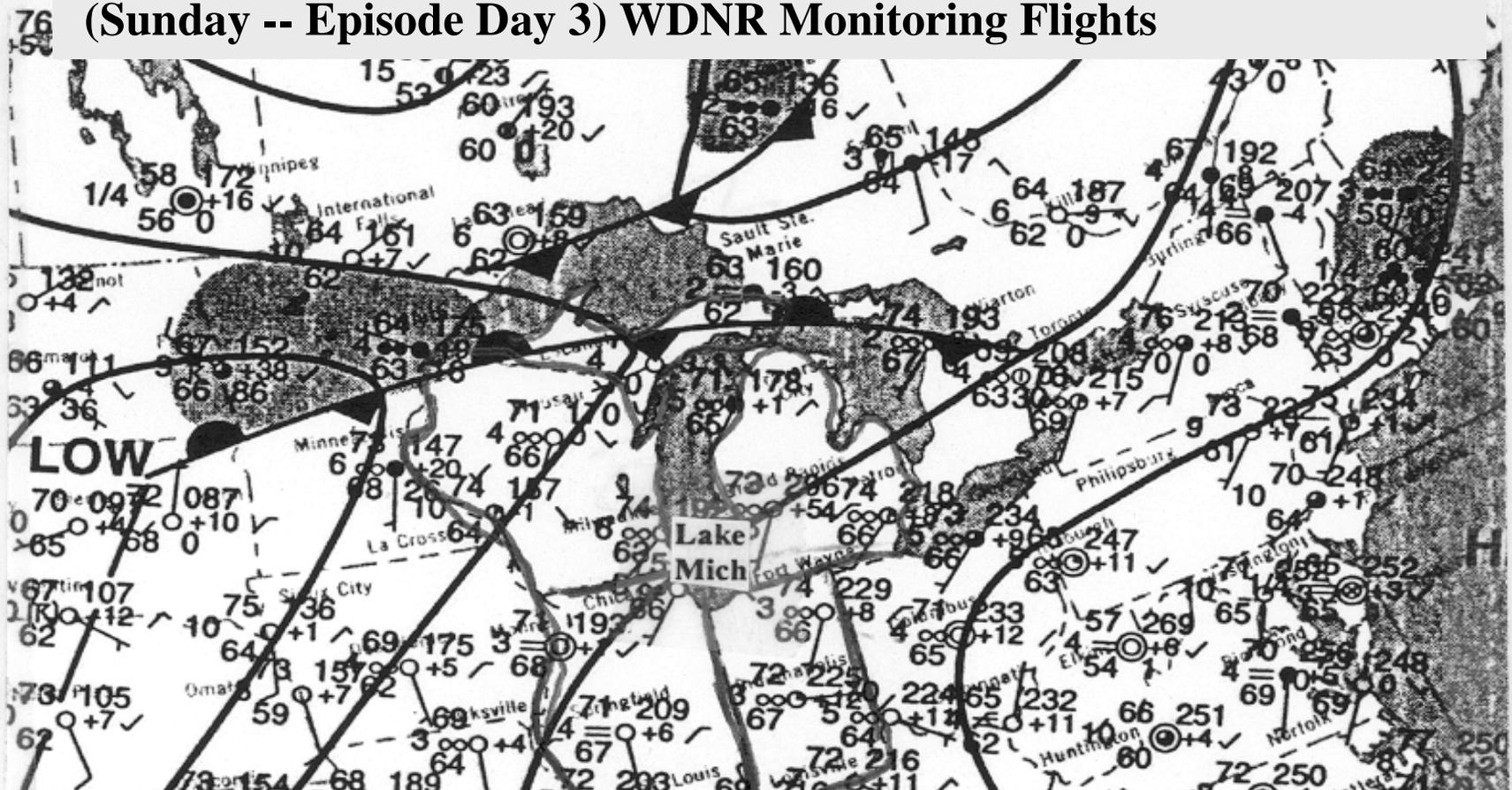


June 19, 2002

Surface Synoptic Weather Map

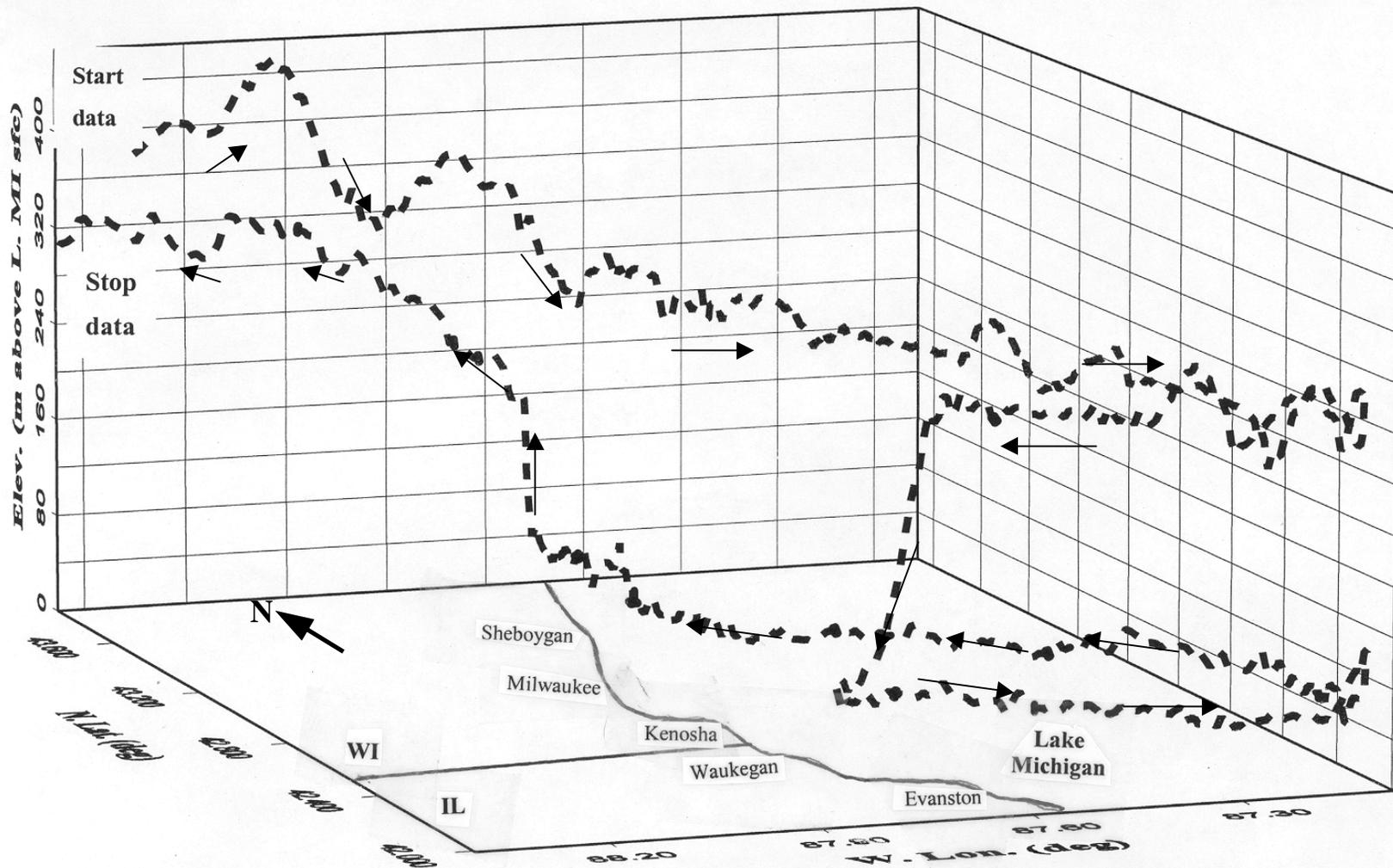
6 AM CST 23 June 02

(Sunday -- Episode Day 3) WDNR Monitoring Flights



....studying ozone formation meteorology...

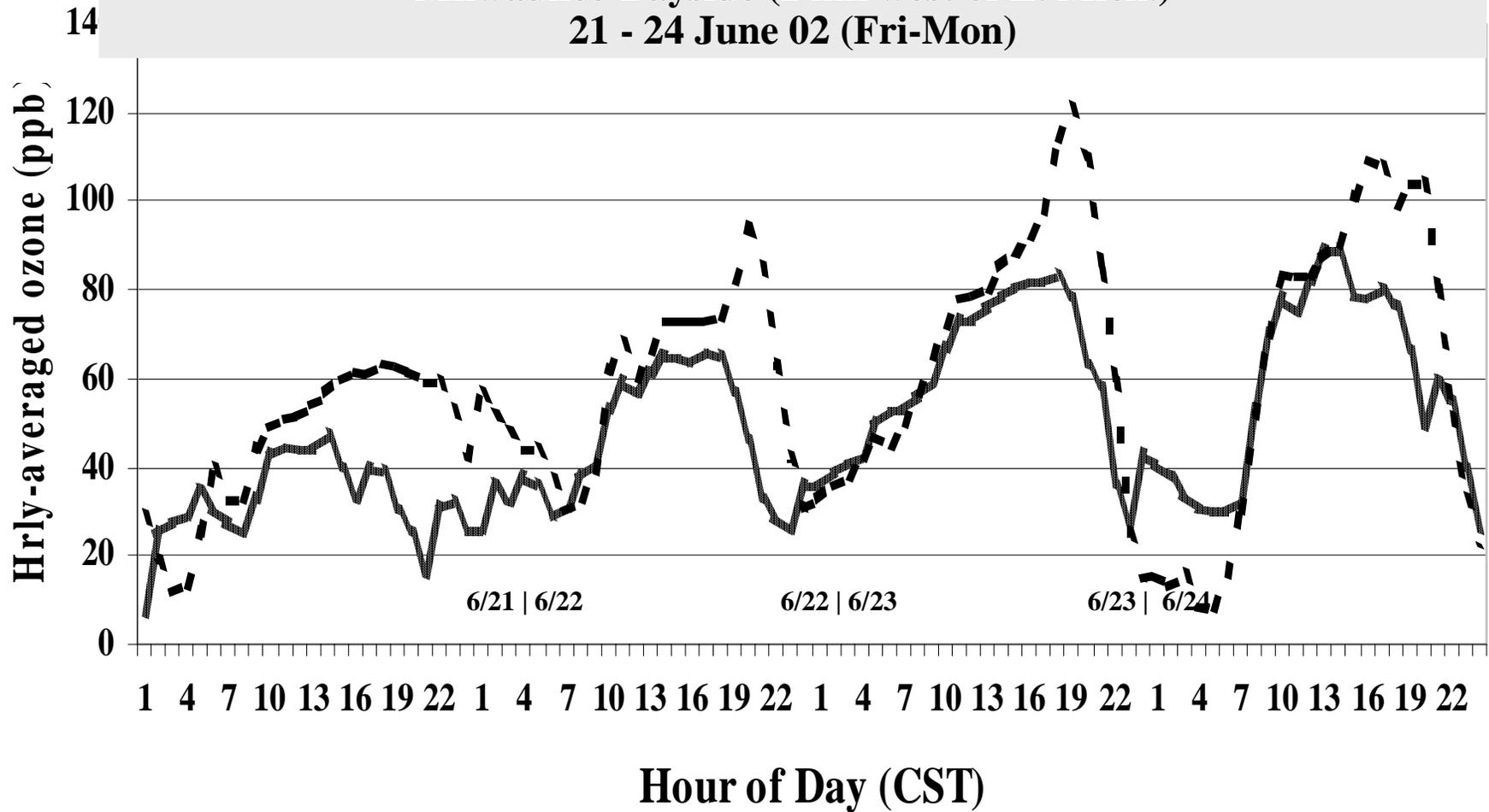
Three-Dimensional Depictions (Lat-Lon-Ht Above L. Mich Surface Level) WDNR Airplane Flight Path During 22 - 25 June 02



Analyzing Flight and Modeling Parameters

- **Ozone (aloft & surface)**
- **Temperature (aloft & surface)**
- **Wind Speed (aloft & surface)**
- **Wind Direction (aloft & surface)**
- **Relative humidity (aloft only)**

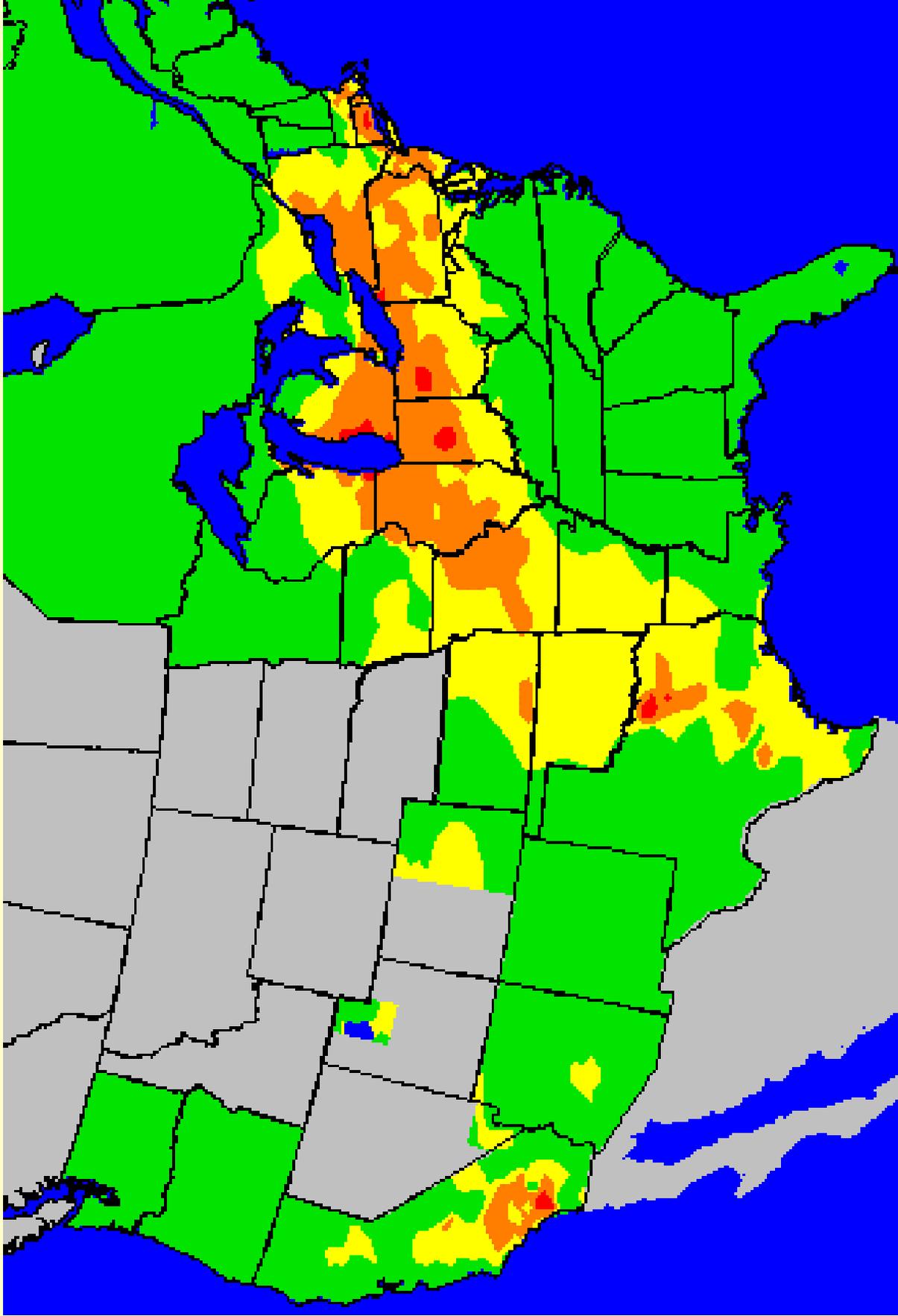
Crafting Time Series: Hourly Ozone
Milwaukee-Appleton Ave (10 km west of L. Mich)
Milwaukee-Bayside (2 km west of L. Mich.)
21 - 24 June 02 (Fri-Mon)



— Hrly O3 (ppb): Milw-Appleton Av, WI 21-24 June 02
- - - Hrly O3 (ppb): Milw-Bayside, WI 21-24 June 02

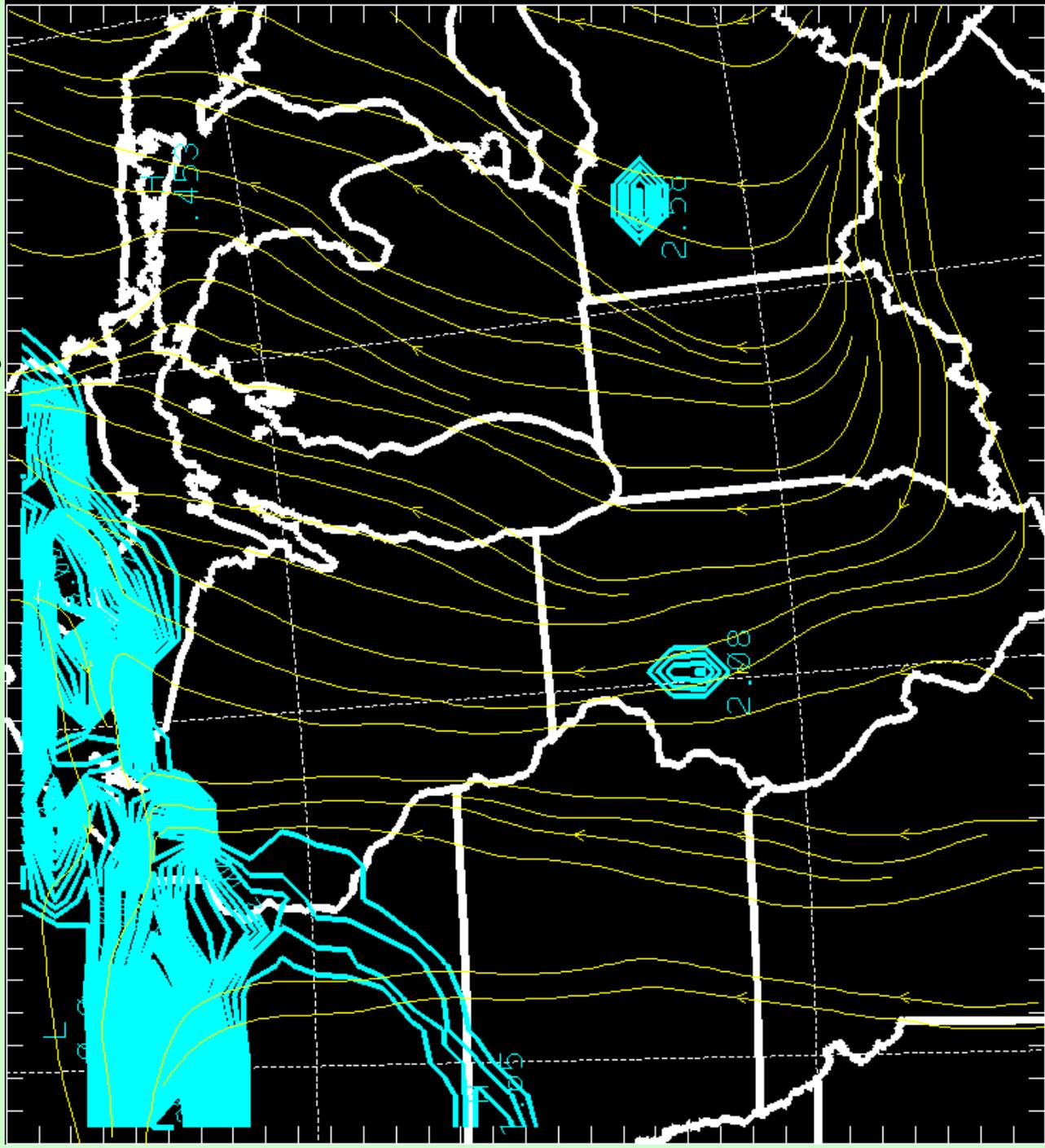
2002 - June Episode Wind Field Directional Assessments

**Modeled Wind Fields for Surface and Mixing Layers for
2 Days of the 5 Day June 2002 Ozone Episode to Help
Assess Directional Pollutant and Precursor
Contribution compared to AIRNOW 8-Hour Maps**

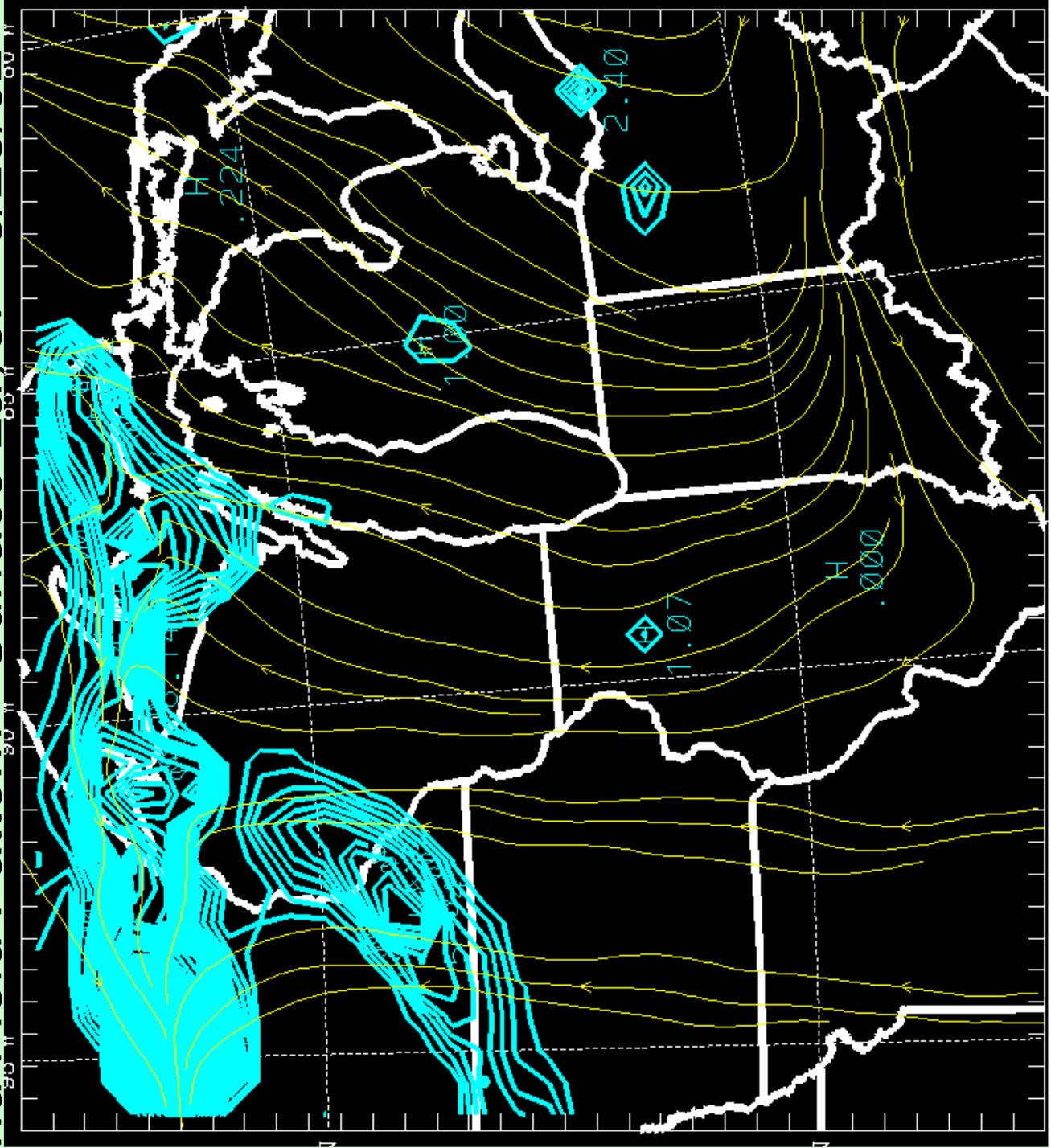


June 23, 2002

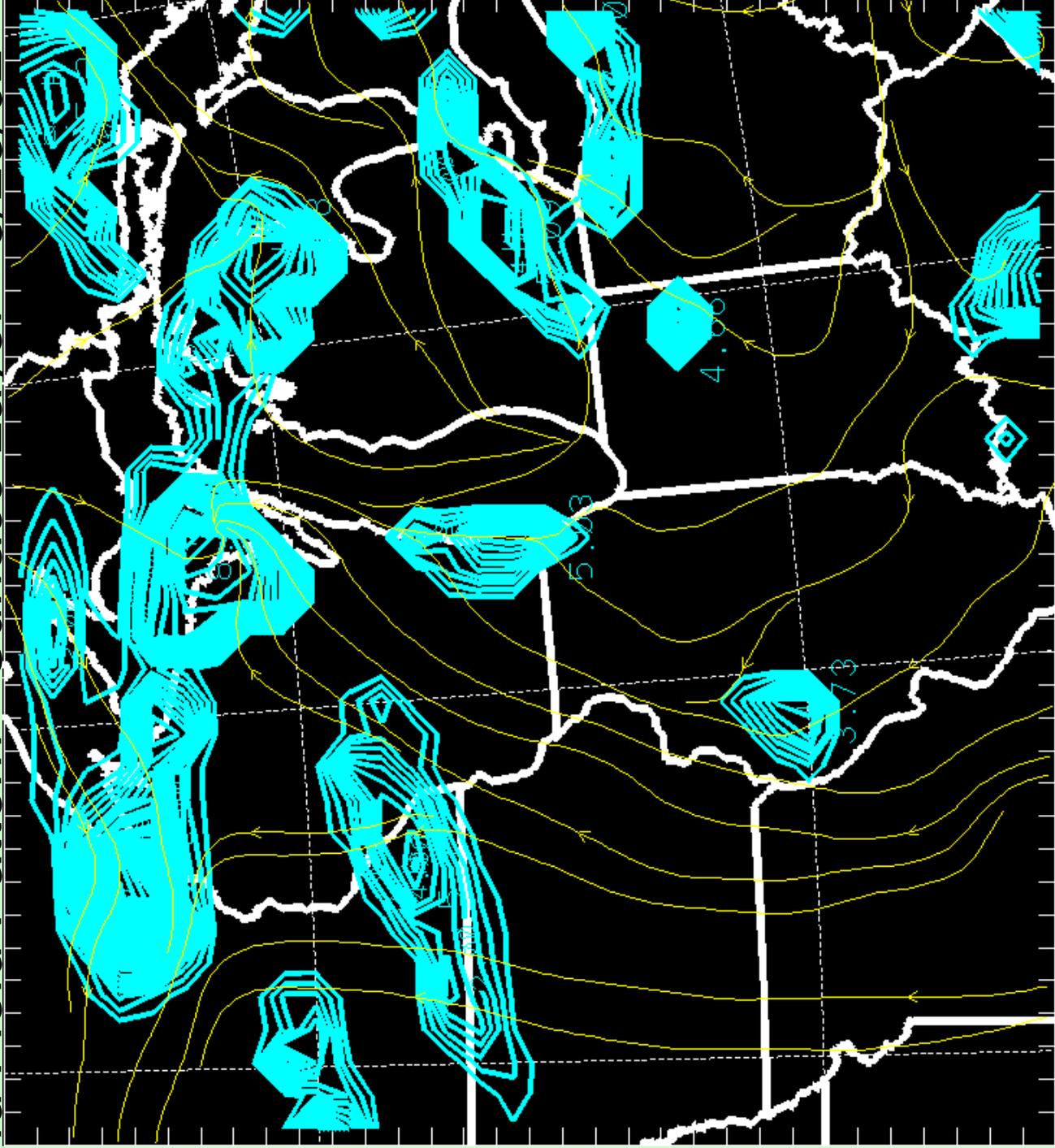
Wind Field Pattern - Surface Layer - 6/23/02 - 9:00



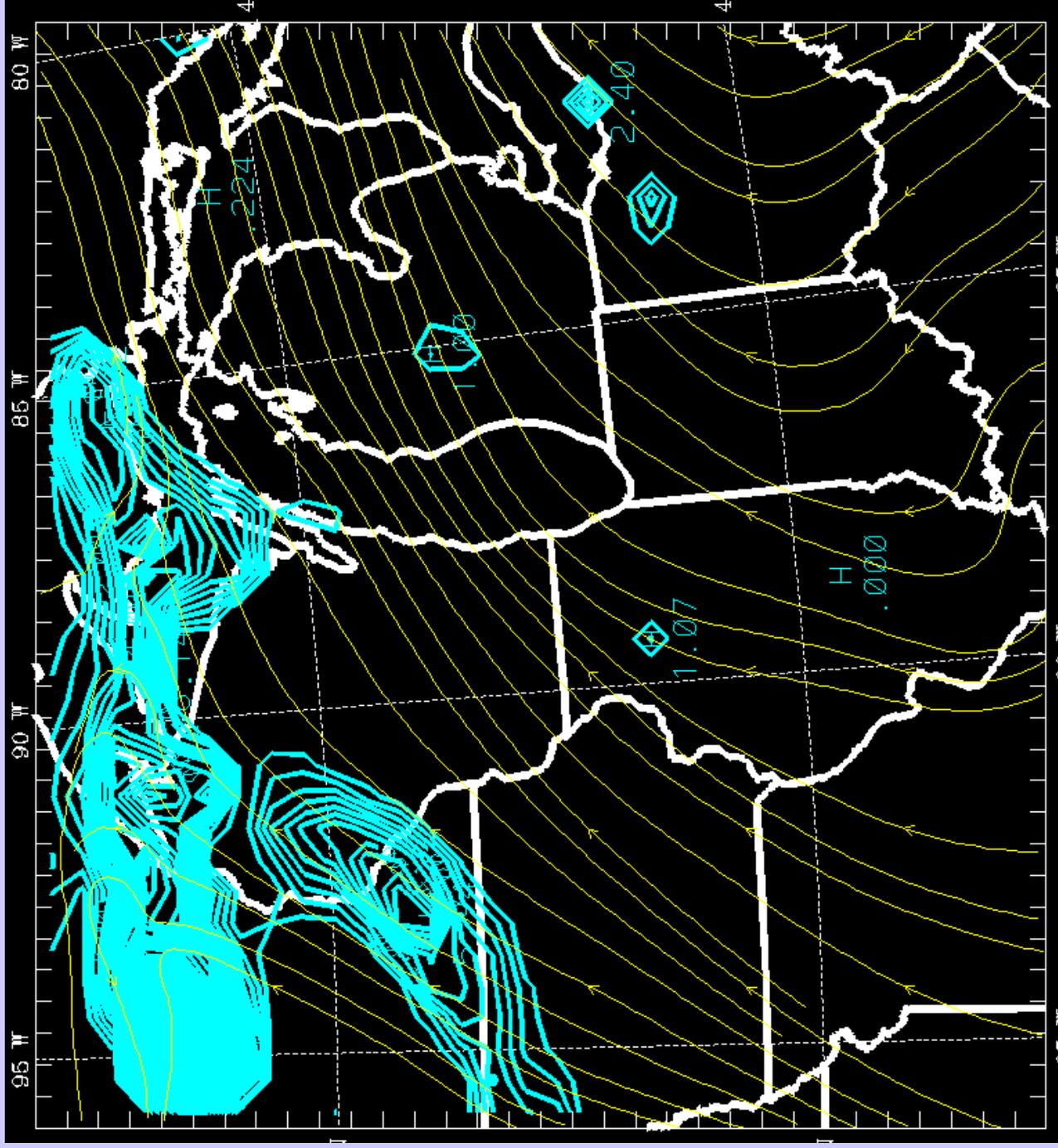
Wind Field Pattern - Surface Layer - 6/23/02 - 12:00



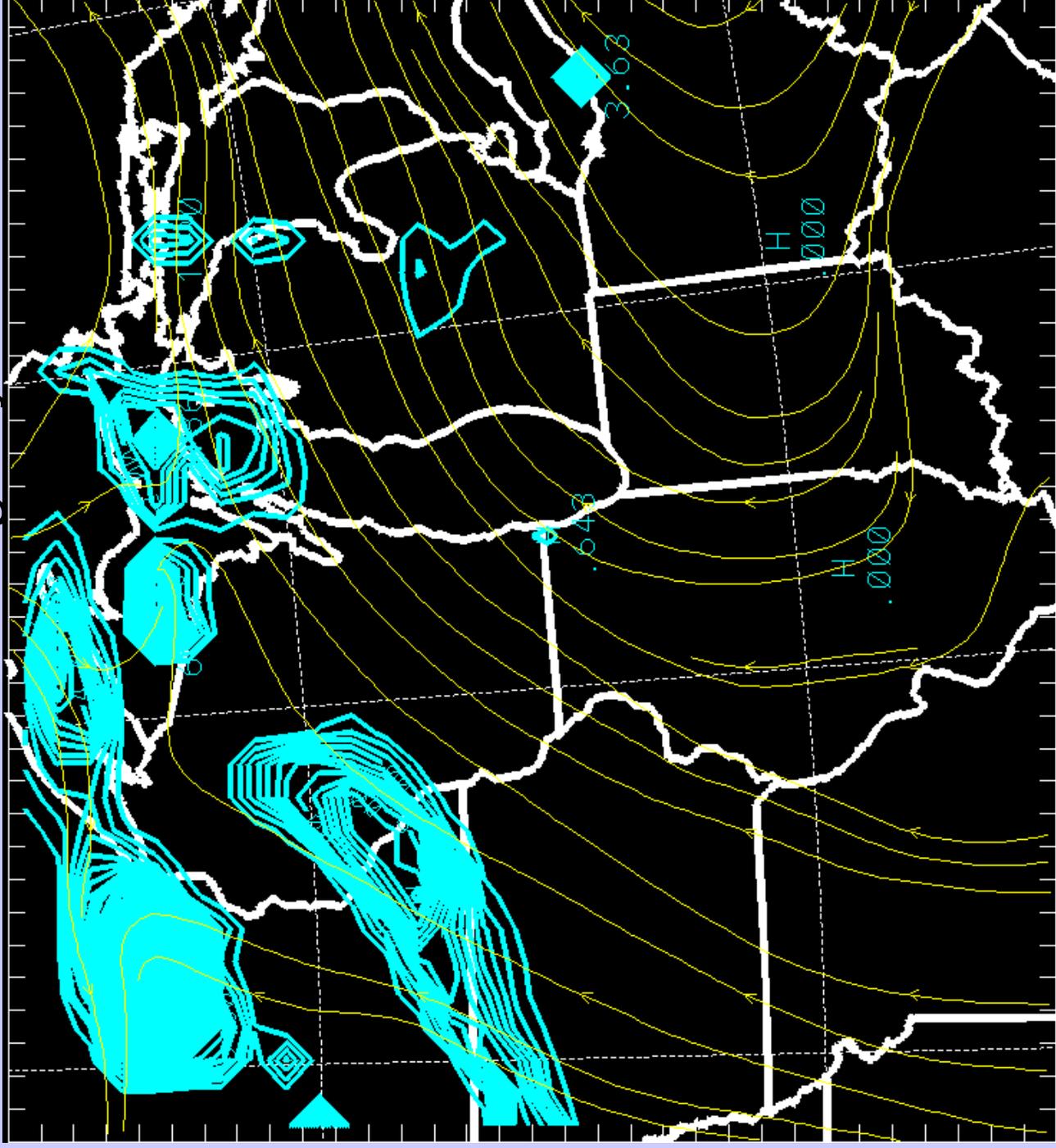
Wind Field Pattern - Surface Layer - 6/23/02 - 18:00



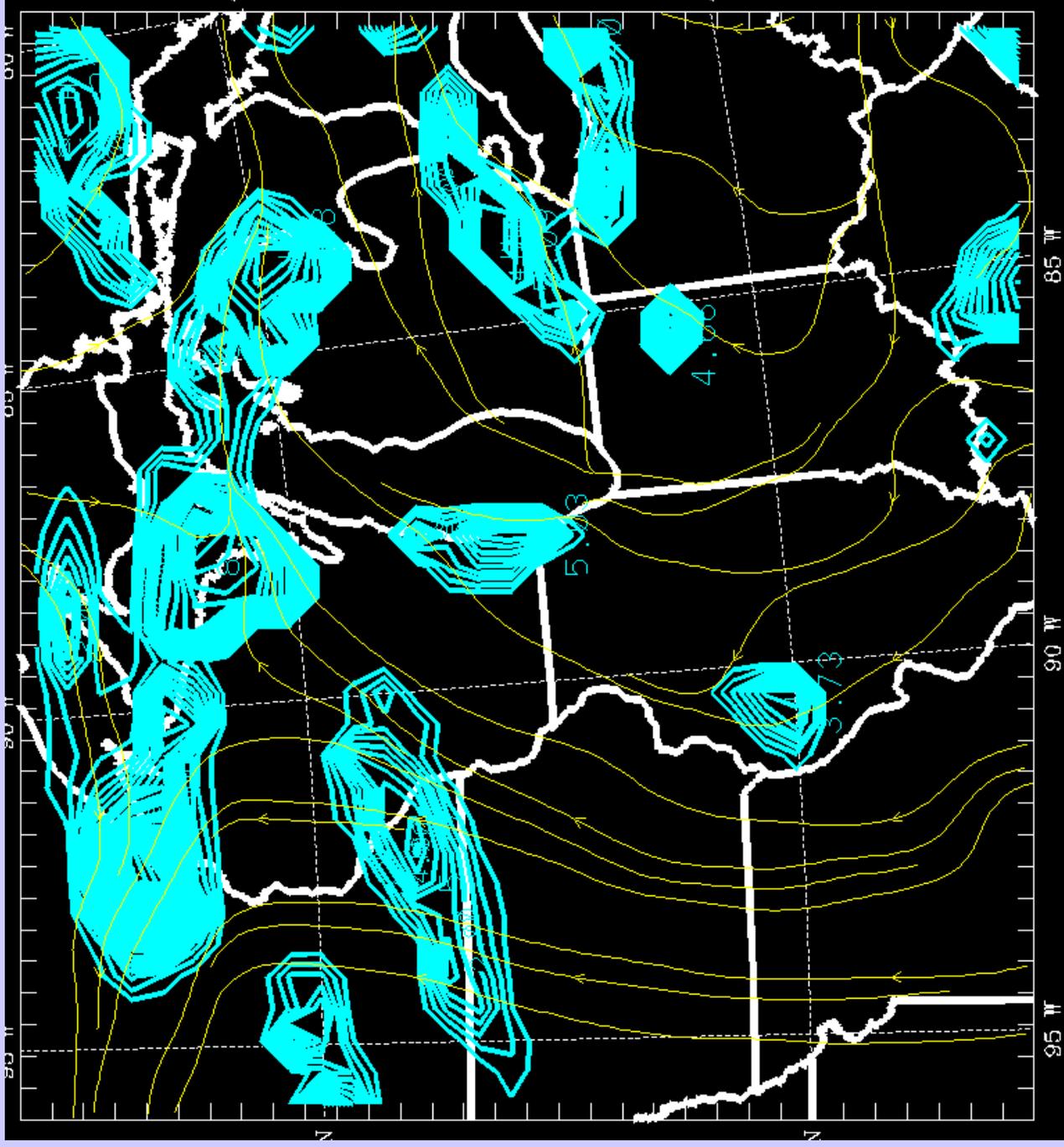
Wind Field Pattern - Mixing Layer - 6/23/02 - 12:00

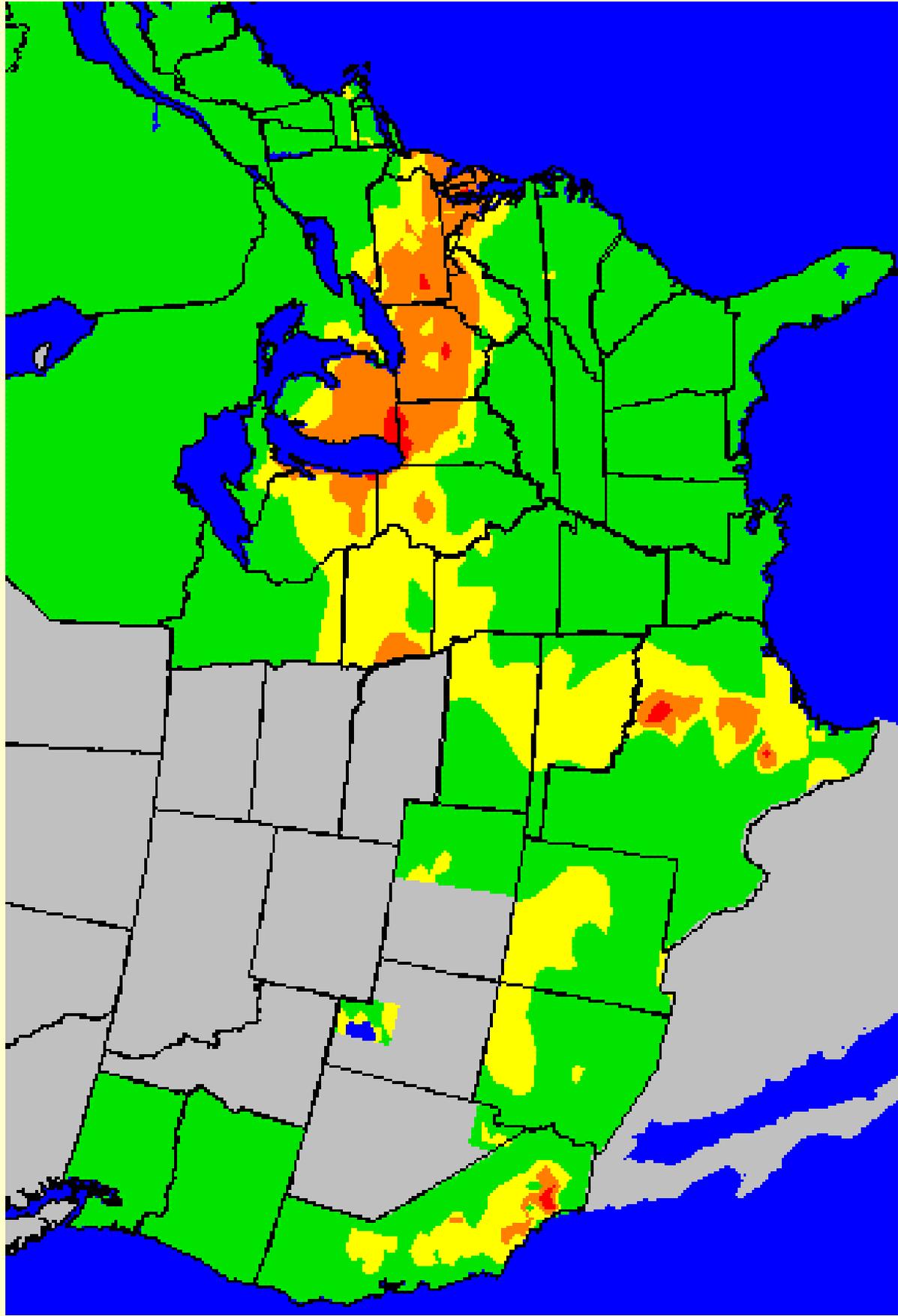


Wind Field Pattern - Mixing Layer - 6/23/02 - 15:00



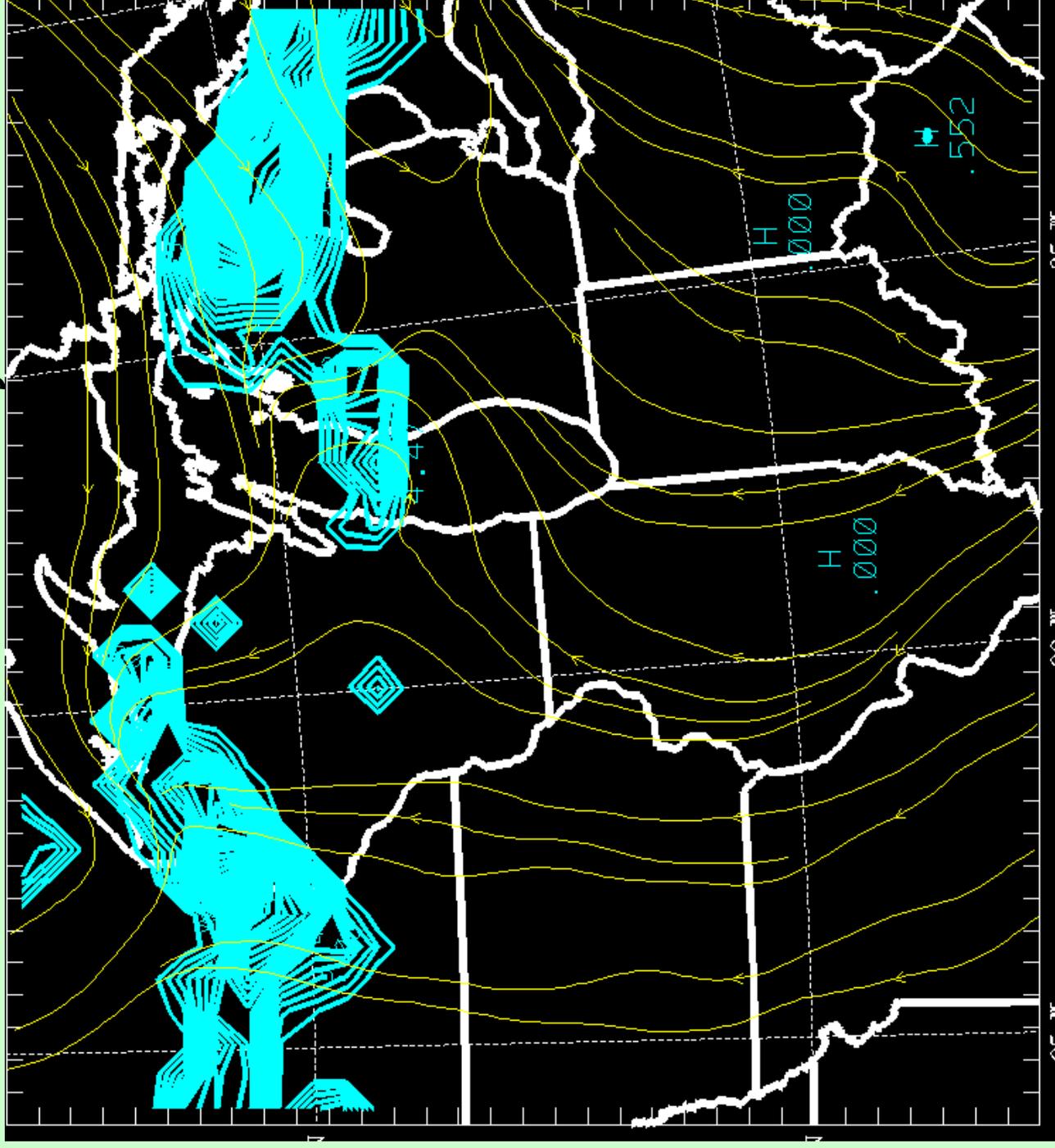
Wind Field Pattern - Mixing Layer - 6/23/02 - 18:00



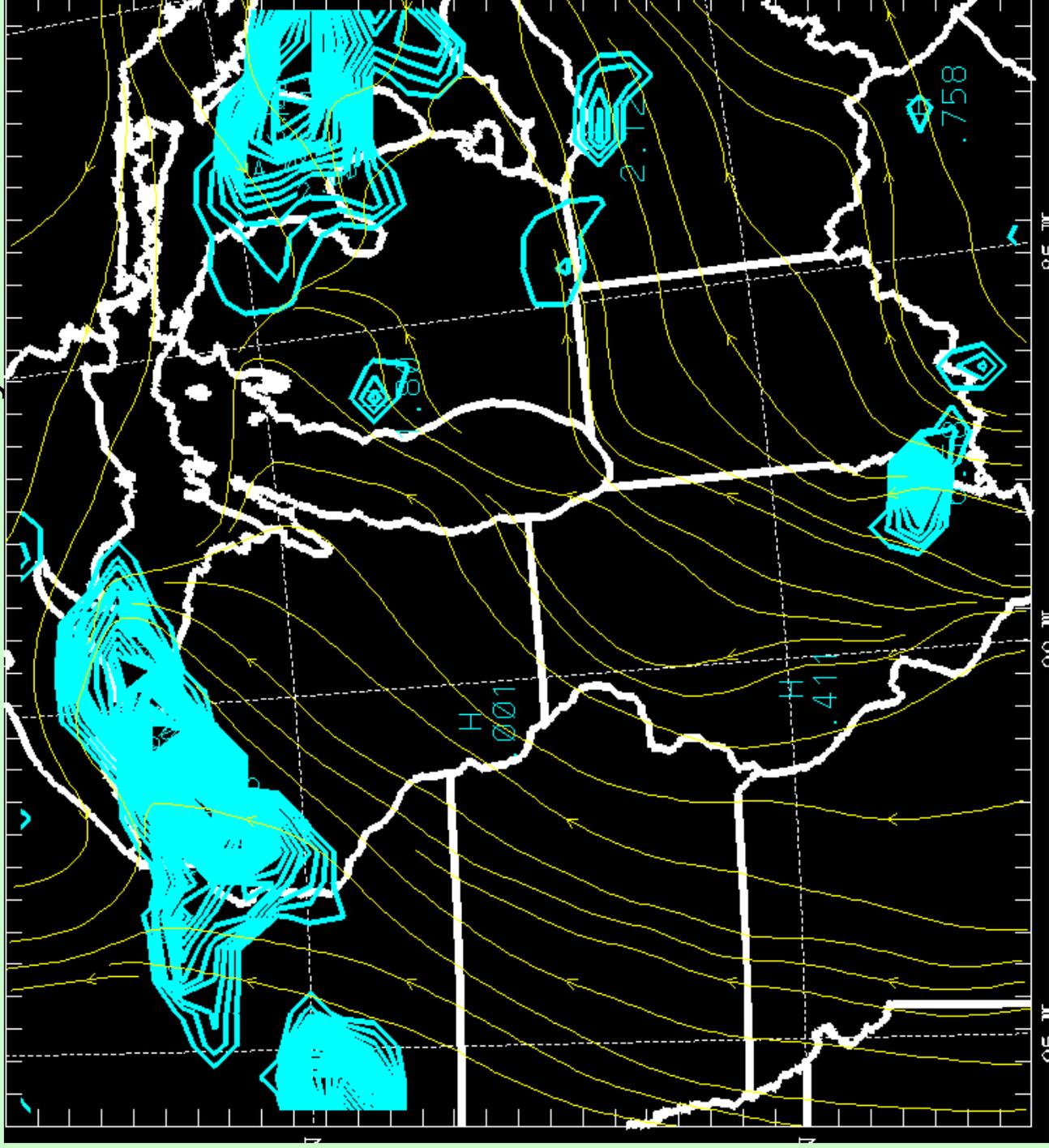


June 24, 2002

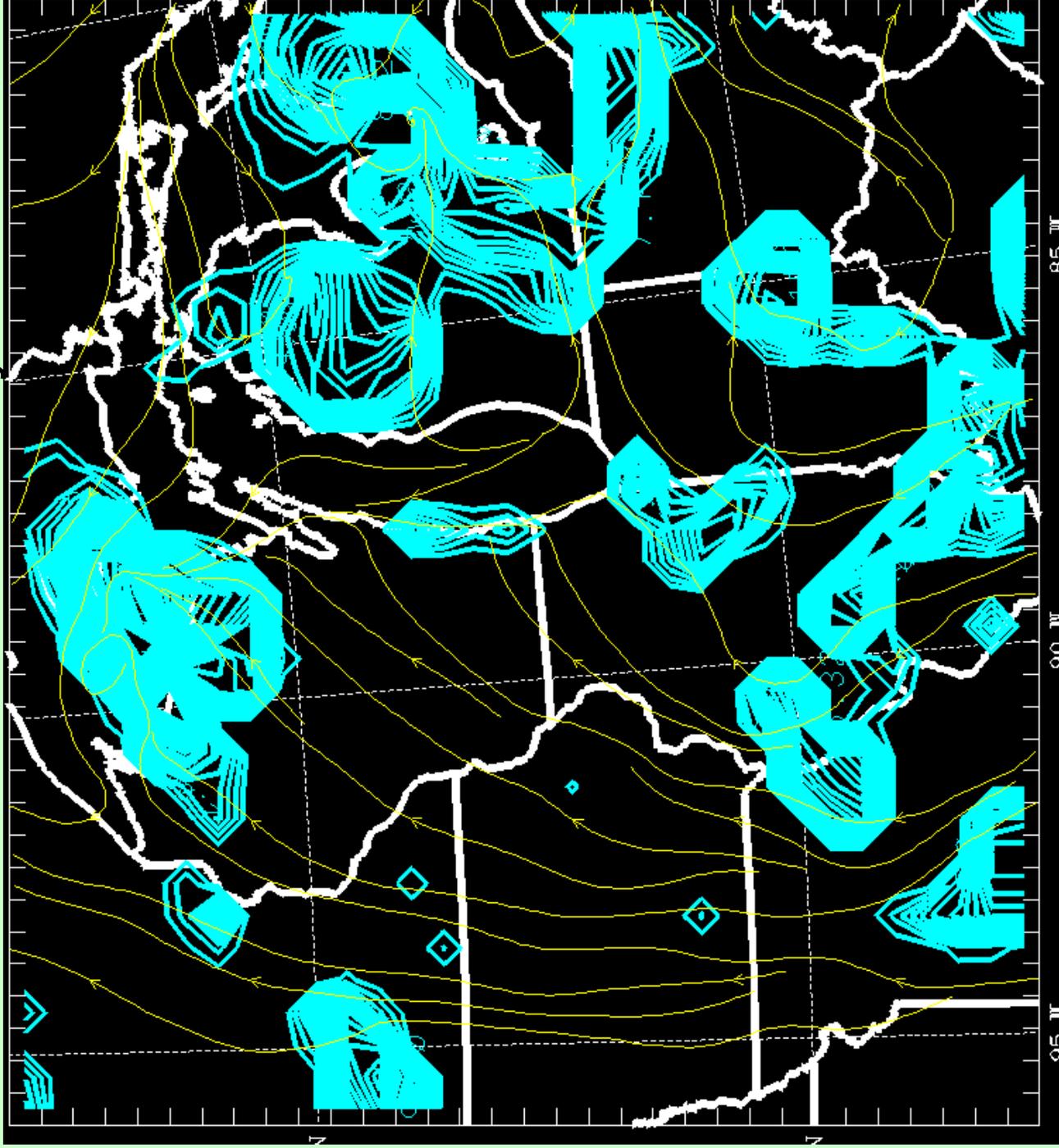
Wind Field Pattern - Surface Layer - 6/24/02 - 12:00



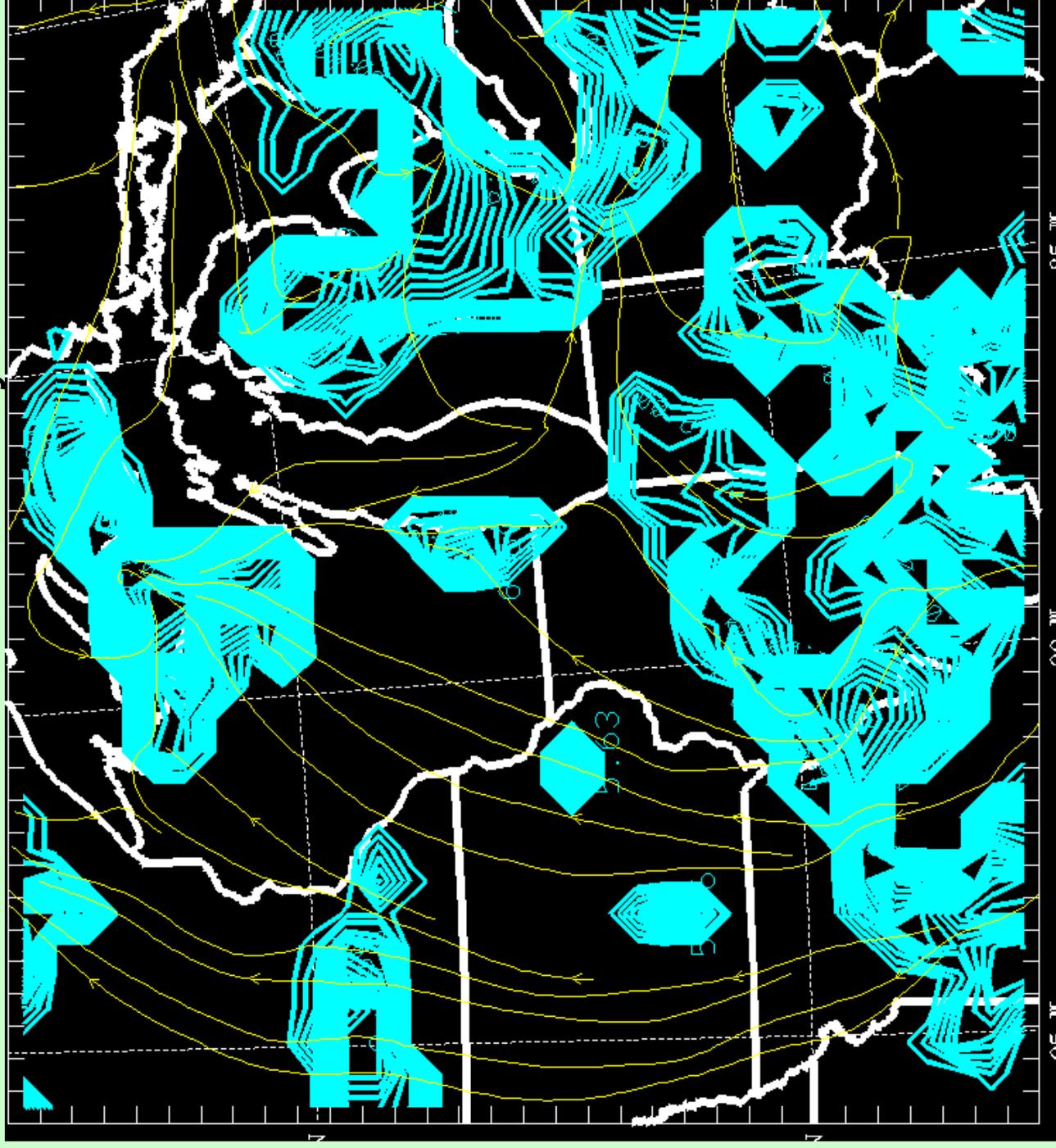
Wind Field Pattern - Surface Layer - 6/24/02 - 15:00



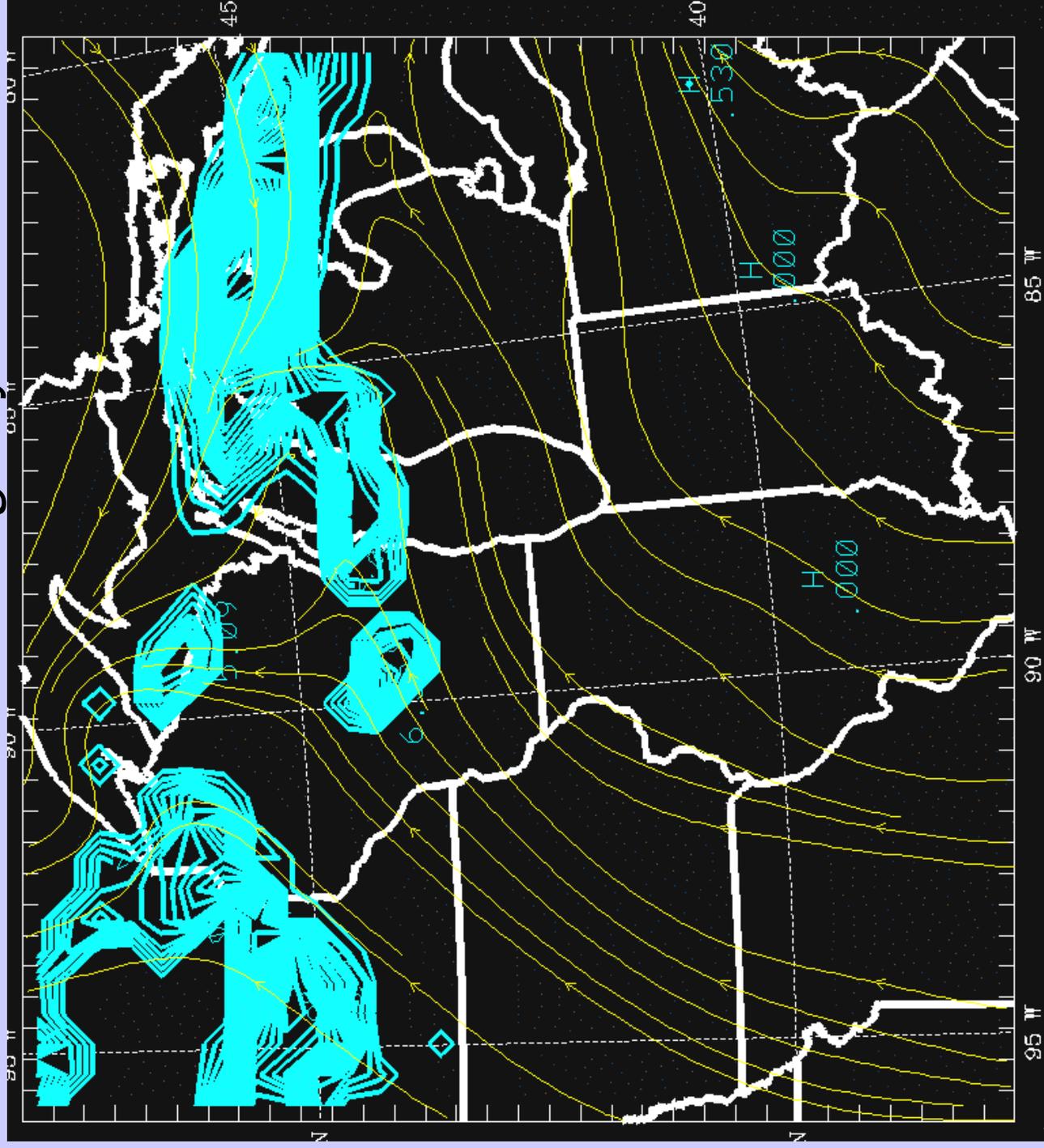
Wind Field Pattern - Surface Layer - 6/24/02 - 18:00



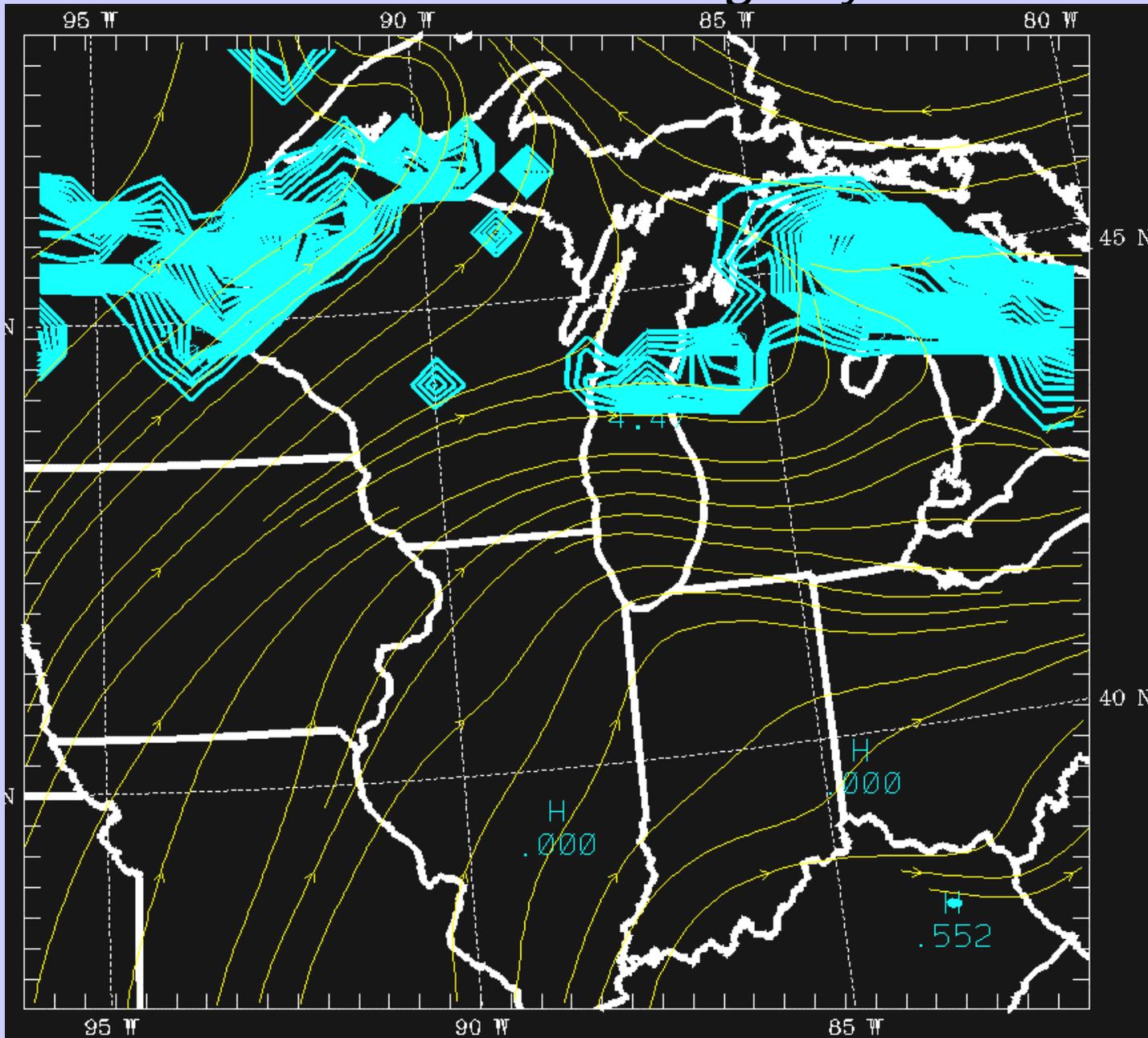
Wind Field Pattern - Surface Layer - 6/24/02 - 21:00



Wind Field Pattern - Mixing Layer - 6/24/02 - 9:00

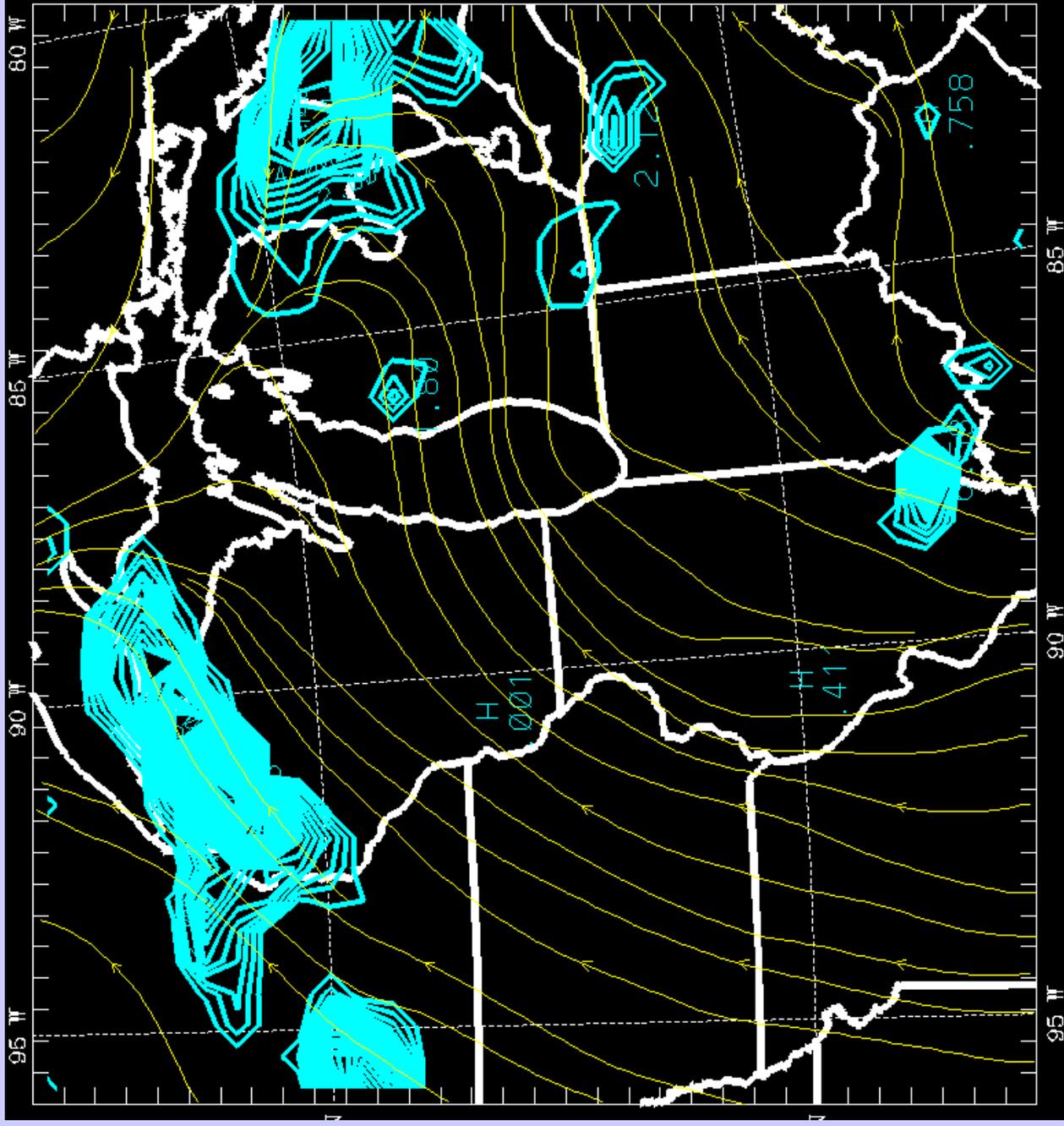


Wind Field Pattern - Mixing Layer - 6/24/02 - 12:00

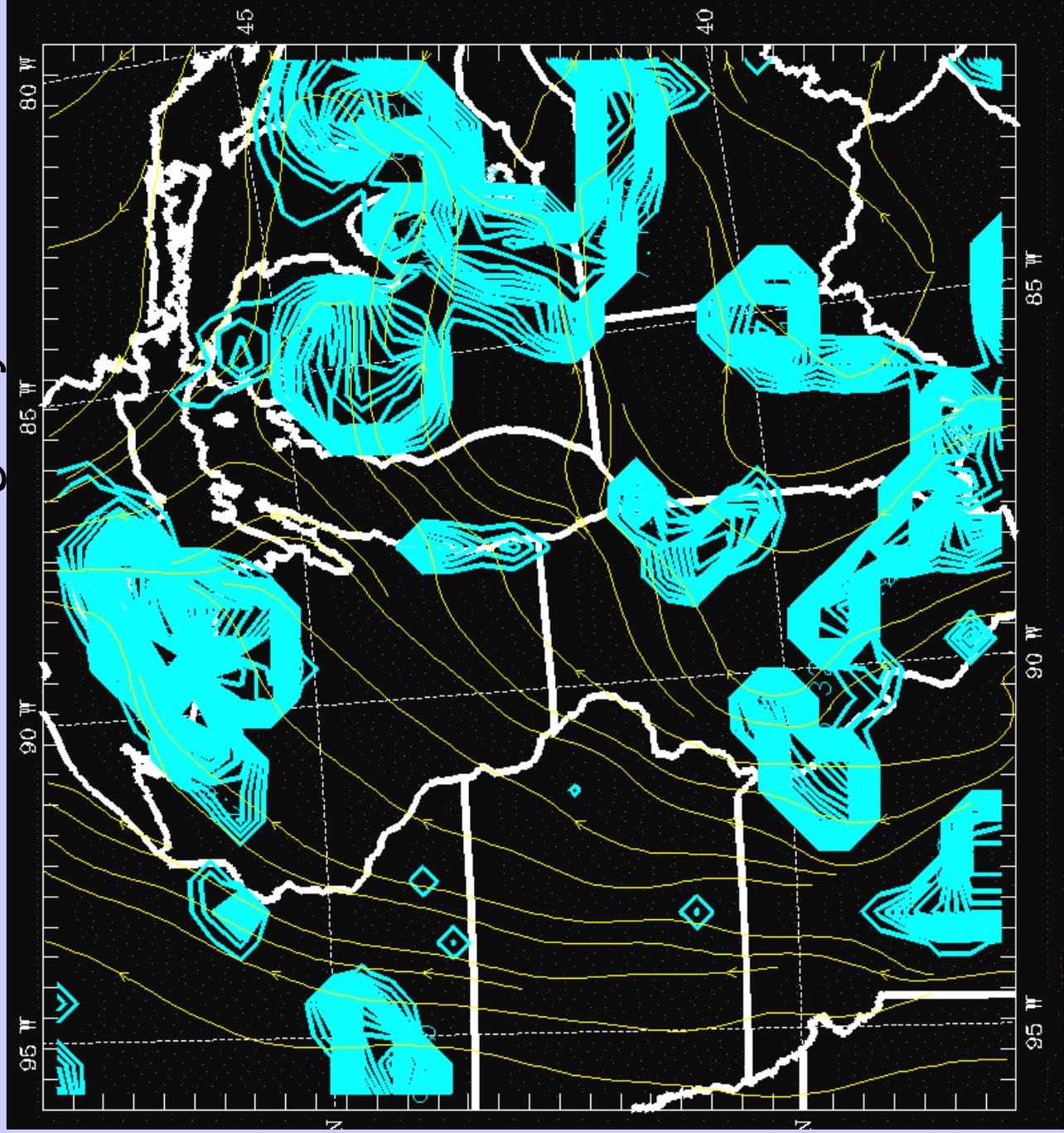


*Note West to East
Transport in
Mixing
Layer...*

Wind Field Pattern - Mixing Layer - 6/24/02 - 15:00

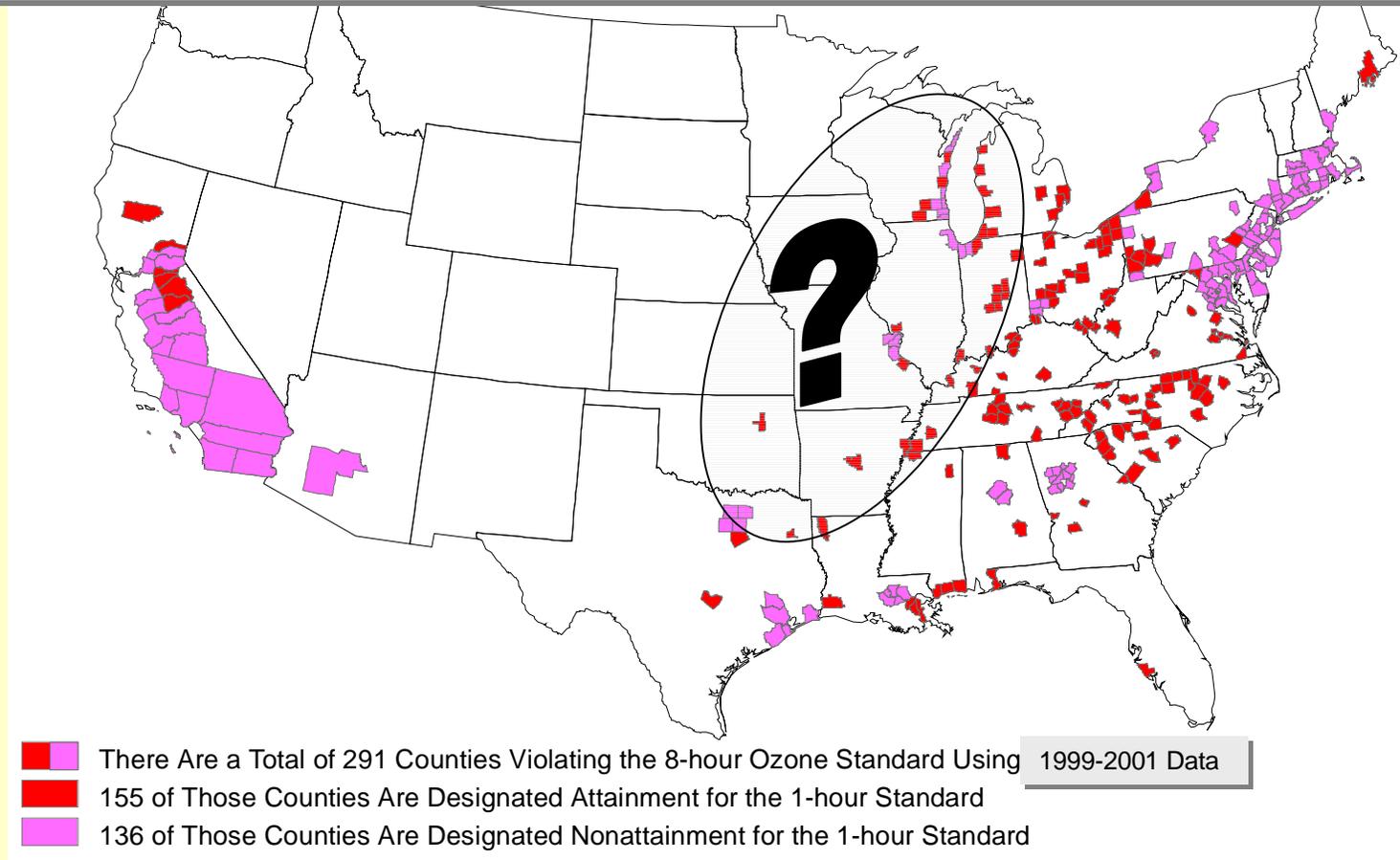


Wind Field Pattern - Mixing Layer - 6/24/02 - 18:00



***Summarizing the recent AQ monitor
data....***

US Counties violating the 8-hr ozone NAAQS under 1999-2001 data - (2000 was very "cool" ozone year in shaded area)



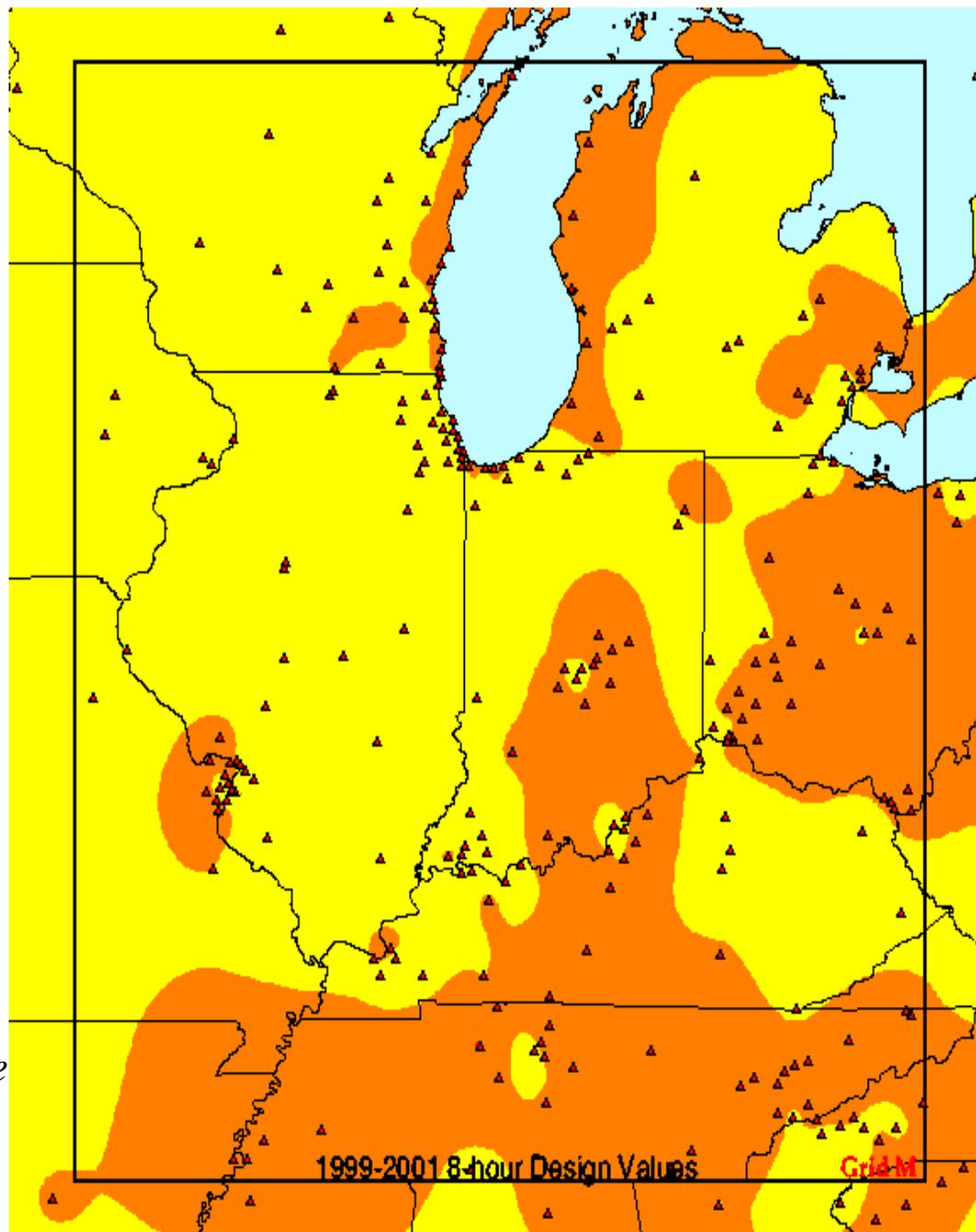
....identifying the problem areas through designation alerts the public to their local health problem and...

1999-2001 Design Value Fields

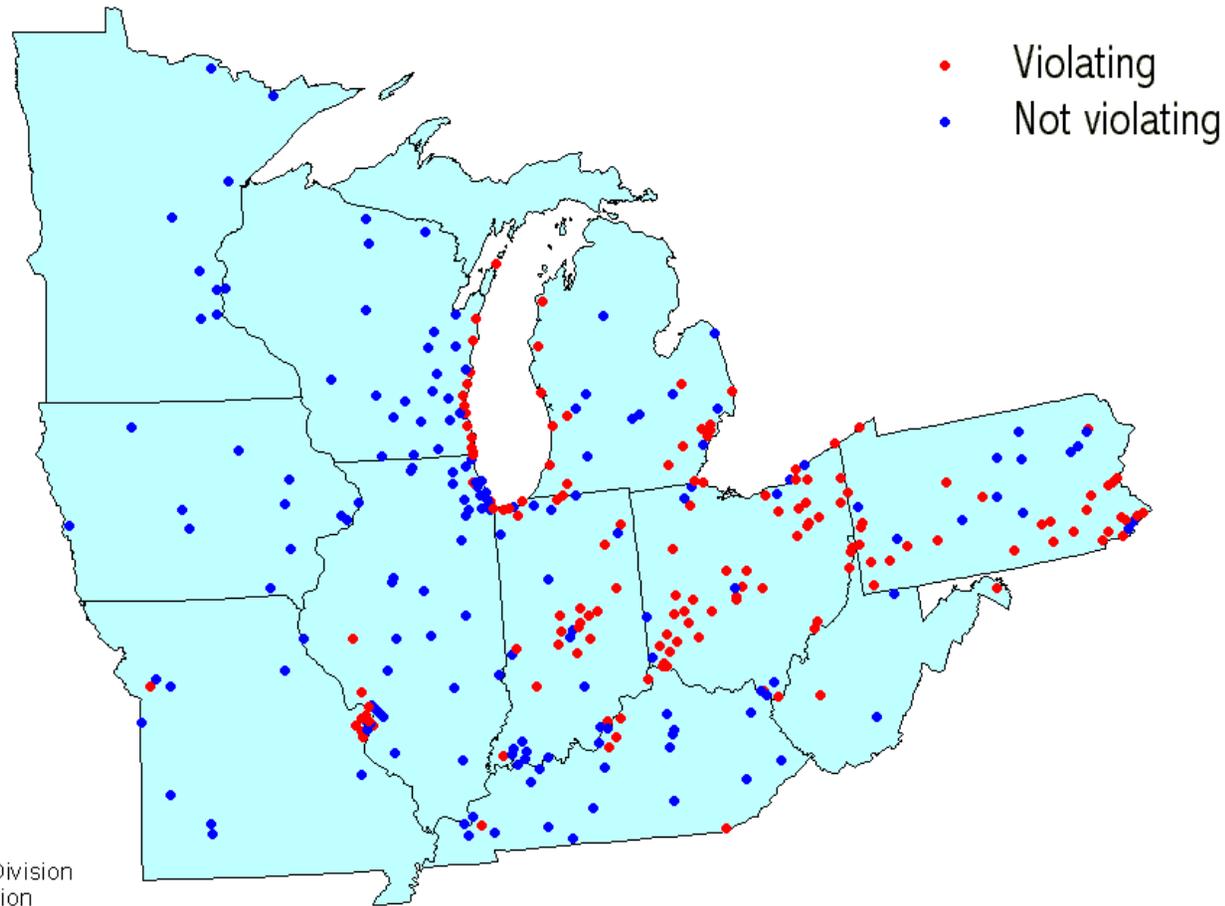
LADCO - Regional
Smoothing Algorithm

Above and Below 85
ppb based on
preliminary date
(late 2002)

A modeled estimate of violating areas based on earlier AQ data using monitors rather than county or area boundaries. Very sensitive to episode patterns specific to the 3 years used and to the algorithm used to “smooth” the data between monitors.



Current EPA Monitoring Map - Region 5 Ozone Status (8-Hr) 2000 - 2002 Data Summary

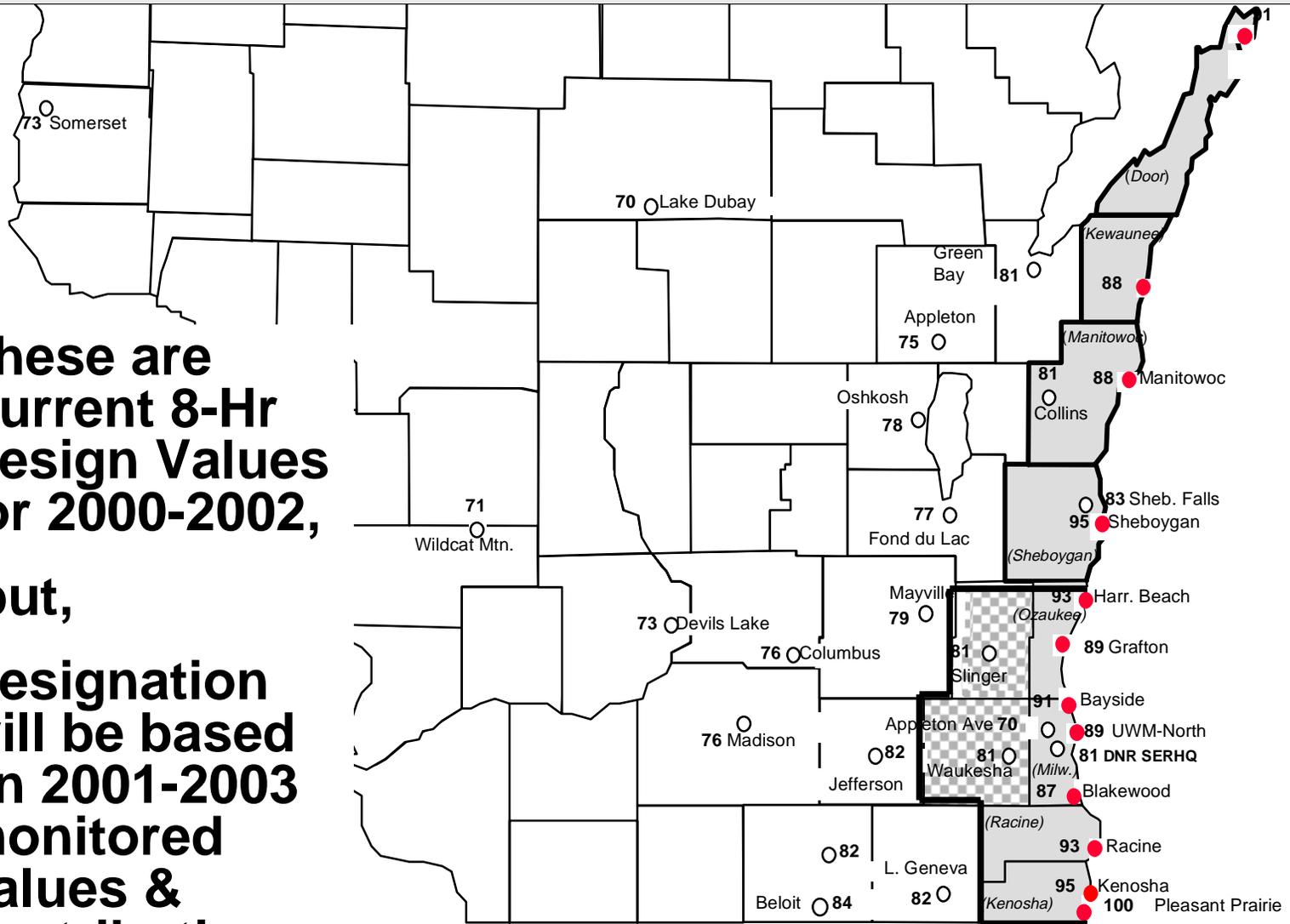


USEPA Region 5
Air and Radiation Division
Air Monitoring Section
2/3/03
Data: 2000 - 2002

R. Charles

2000-2002 Monitored AQ -
A “Narrow“ Nonattainment Designation Perspective

**These are
Current 8-Hr
Design Values
for 2000-2002,
but,
Designation
will be based
on 2001-2003
monitored
values &
contribution.**



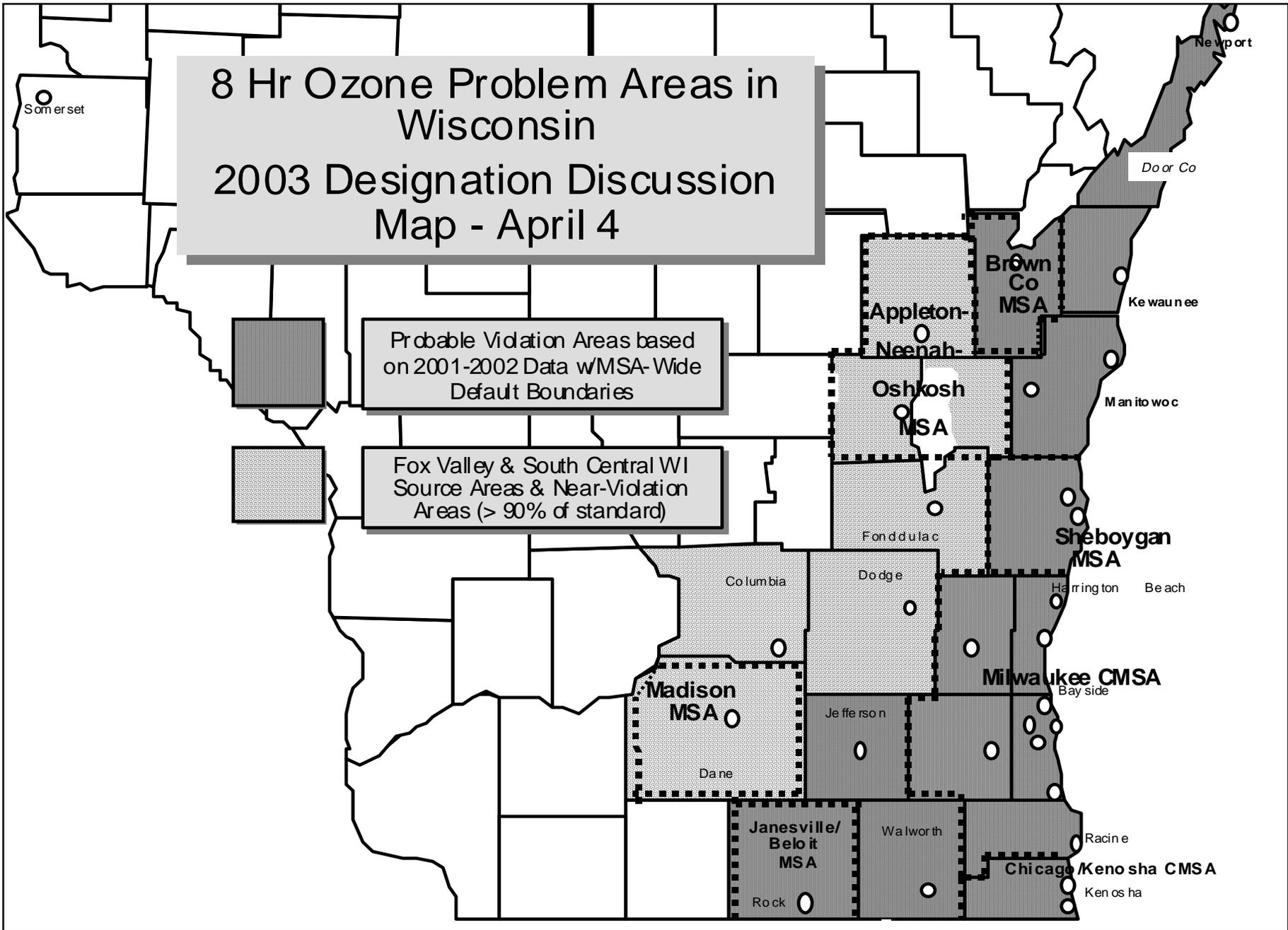
There is significant uncertainty based on the most recent 2-Year Averages (2001 and 2002)a “violating” trend is 85 ppb or higher.

- Green Bay - 86 ppb (Brown Co)
- Lake Geneva - 86 ppb (Walworth Co)
- **Oshkosh - 83 ppb (Winnebago Co)**
- Jefferson - 85 ppb (Jefferson Co)
- **Mayville - 82 ppb (Dodge Co)**
- **Madison - 79 ppb (Dane Co)**
- Beloit - 85 ppb (Rock Co)
- **Slinger - 84 ppb (Milw MSA - Washington Co)**
- **Waukesha - 83 ppb (Milw MSA-Waukesha Co)**

The Attainment SIP will need to define source area(s) regardless of the final O3 “designation” status...this is a problem under current statute because of limits to authority to set a control region larger than the defined nonattainment area.

8 Hr Ozone Problem Areas in Wisconsin

2003 Designation Discussion Map - April 4



Probable Violation Areas based on 2001-2002 Data w/MSA-Wide Default Boundaries

Fox Valley & South Central WI Source Areas & Near-Violation Areas (> 90% of standard)

Brown Co MSA

Appleton-Neenah

Oshkosh MSA

Fond du Lac

Sheboygan MSA

Madison MSA

Milwaukee CMSA

Janesville/Beloit MSA

Chicago/Kenosha CMSA

Somerset

Door Co

Keaukee

Manitowish

Harrington Beach

Bay side

Racine

Kenosha

Newport

Columbia

Dodge

Dane

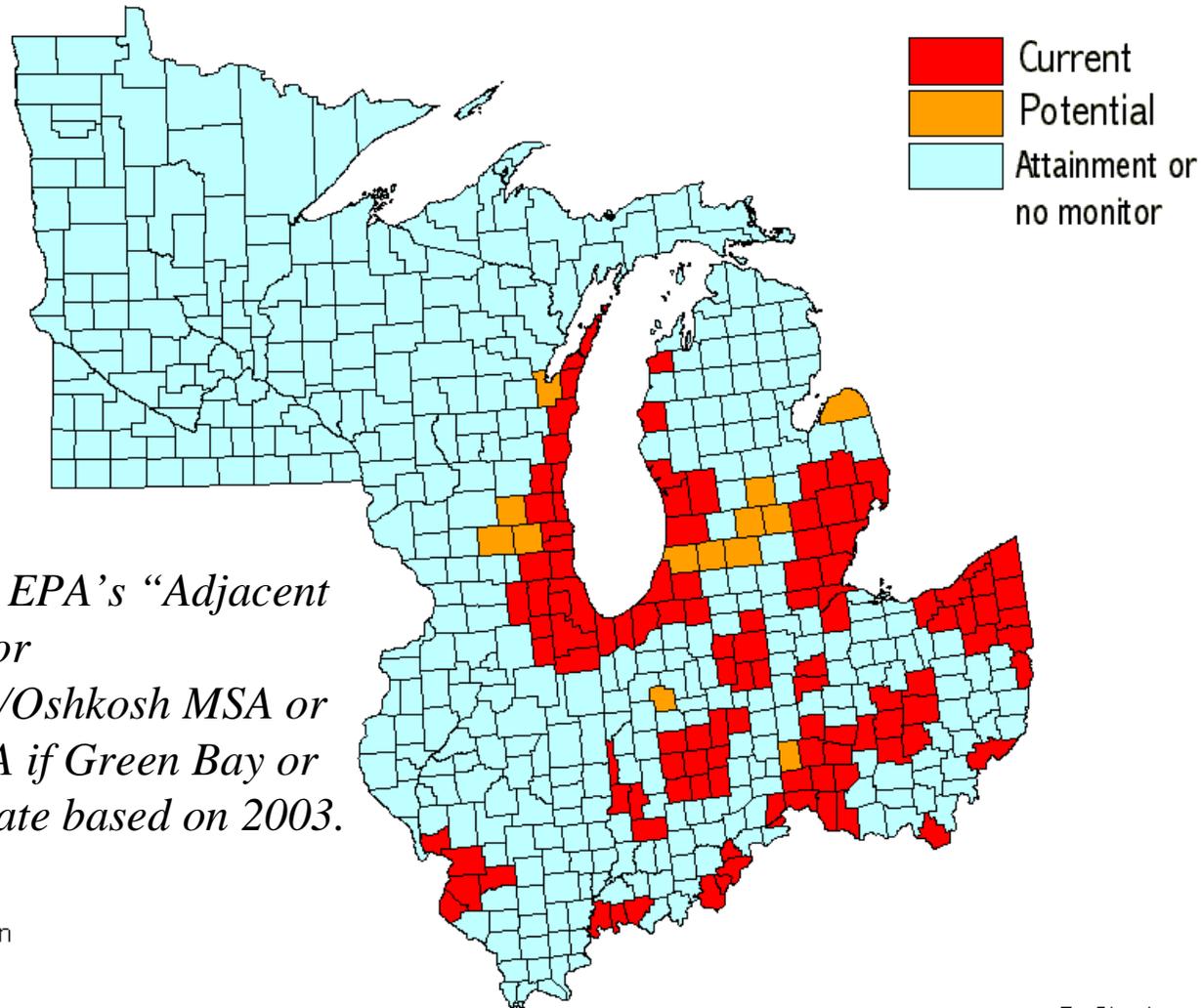
Jefferson

Rock

Walworth

Working EPA Maps - Region 5 8-Hr Ozone Status

Violating Ozone Monitors: Current (2000-02) &
Potential (2001-03) with Associated Areas



Does not address EPA's "Adjacent MSA" criterion for Appleton/Neenah/Oshkosh MSA or the Rockford MSA if Green Bay or Rock County violate based on 2003.

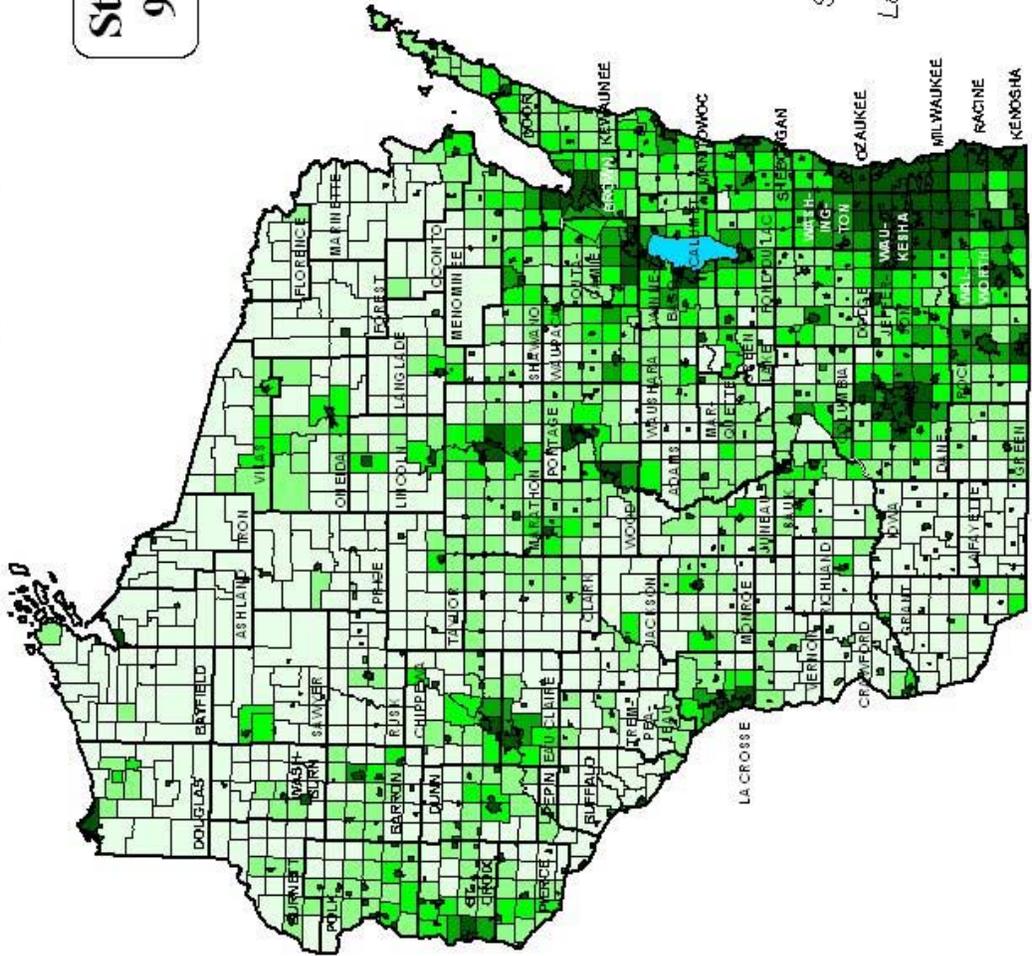
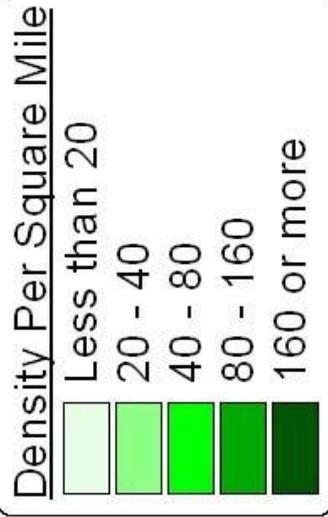
USEPA Region 5
Air and Radiation Division
Air Monitoring Section
4/22/03
Data: 2000 - 2002

R. Charles

***Picturing the key indicators for area
contribution and boundary definition....***

Estimated Population Density in Wisconsin, by Municipality, January 2000

**State Estimated Density, 2000:
97.7 persons per square mile**



Sources of data: WI Demographic Services Center,
January 2000 Population Estimates; WI Office of
Land Information Services, 1998 Land Area by MCD

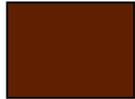
Map prepared by WI Demographic Services
Center, October 2000

Population Density Comparison - County Basis

Key: People per Sq Mile

Dark Brown

222+



Brown/Orange

150-222



Orange

80-150



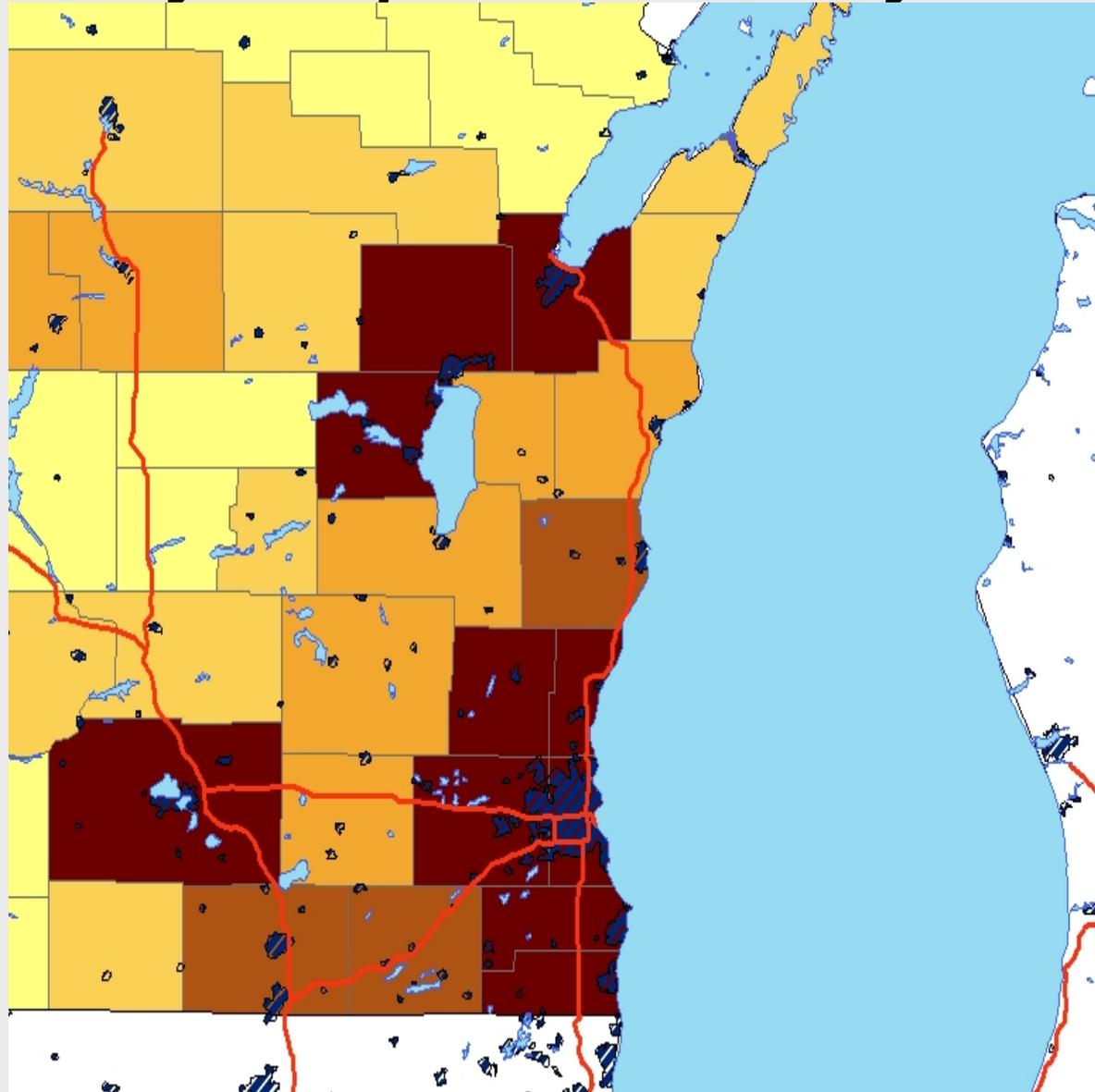
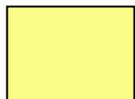
Tan

40-80

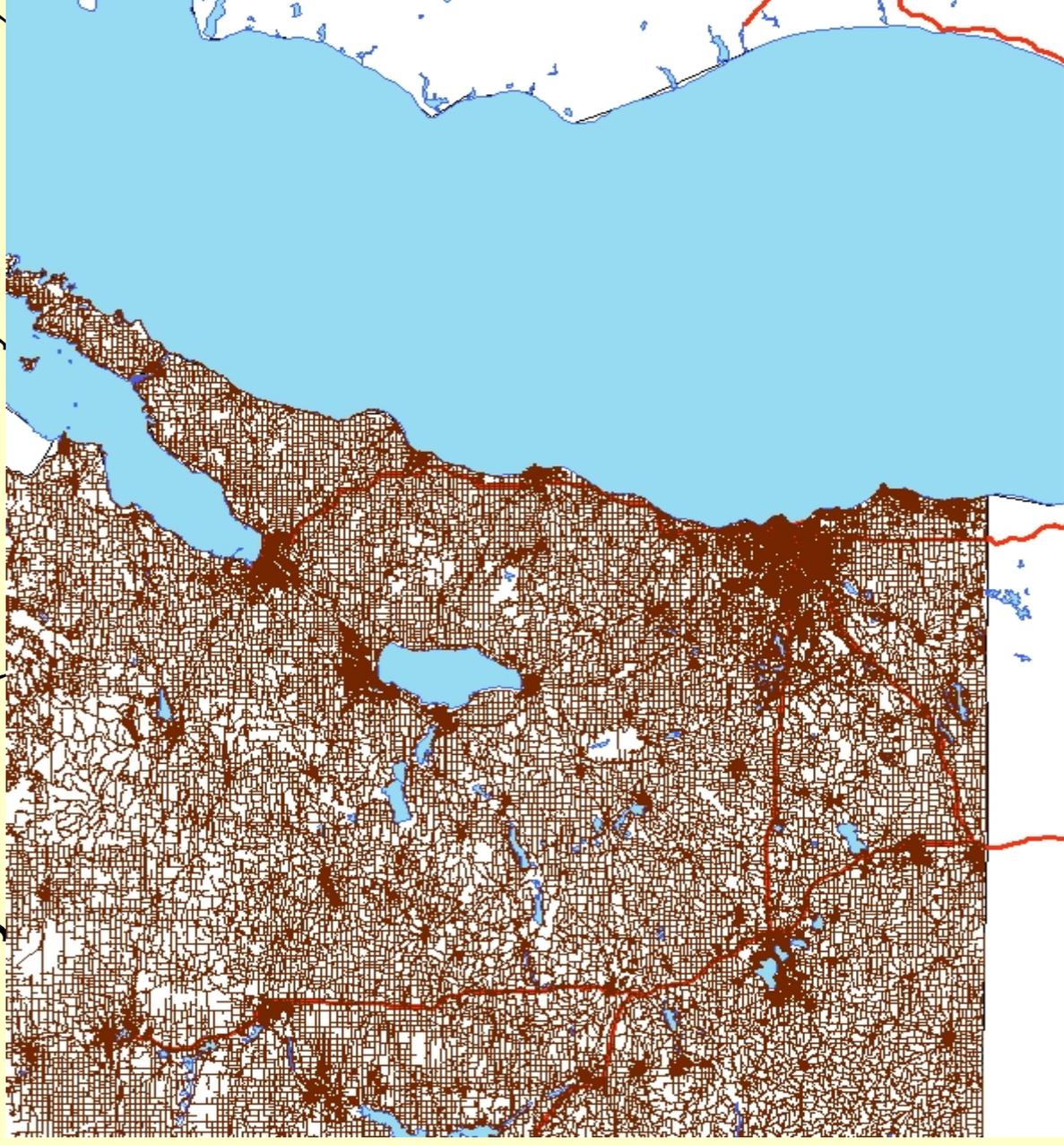


Yellow

9-40



***Example - Wisconsin Paved Roadways Density w/
Freeways Noted (4 lane state hwy 151 not noted)***



Travel Growth Rate Comparison - County Basis

Key:

1985-2000

Annualized
Daily Travel
Growth Rate

Dark Brown

4-6%



Brown/Orange

3-4%



Orange

2-3%



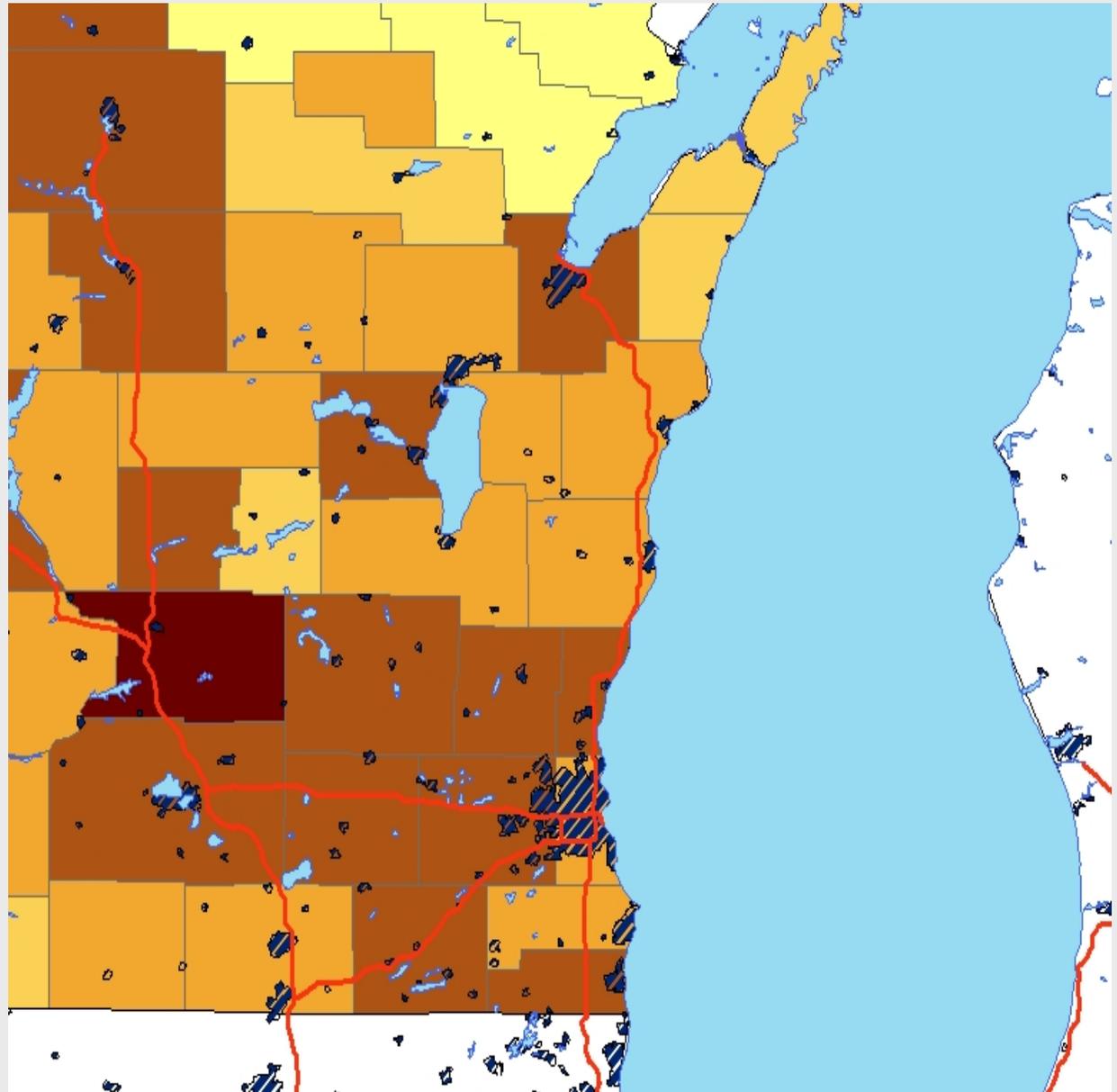
Tan

1-2%



Yellow

<1%

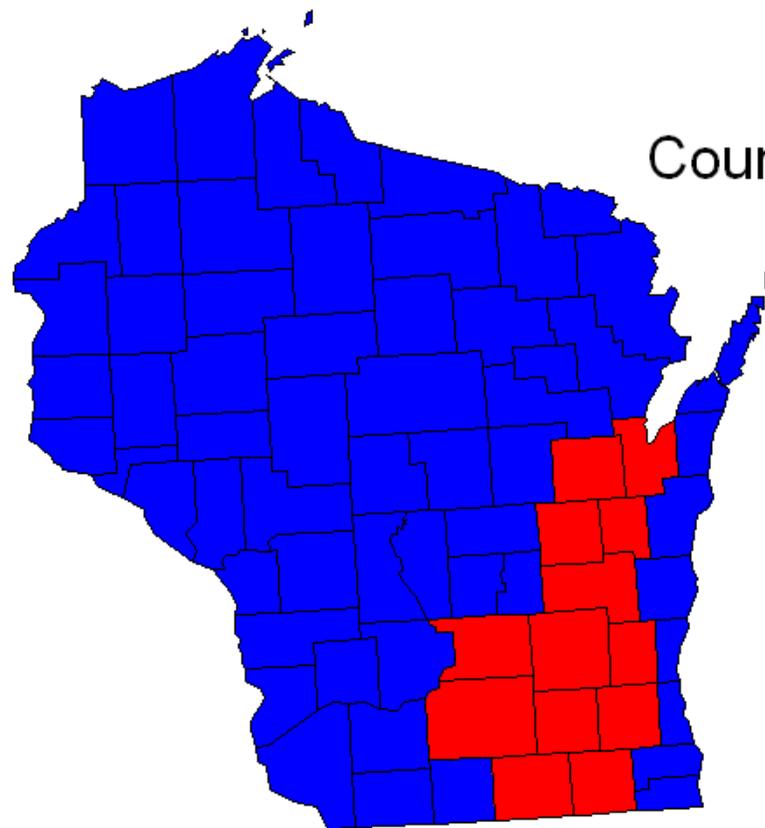


***Assessing the modeled impact of area
emissions under typical conditions...***

2001 - June Episode Fringe Area Impact Assessment

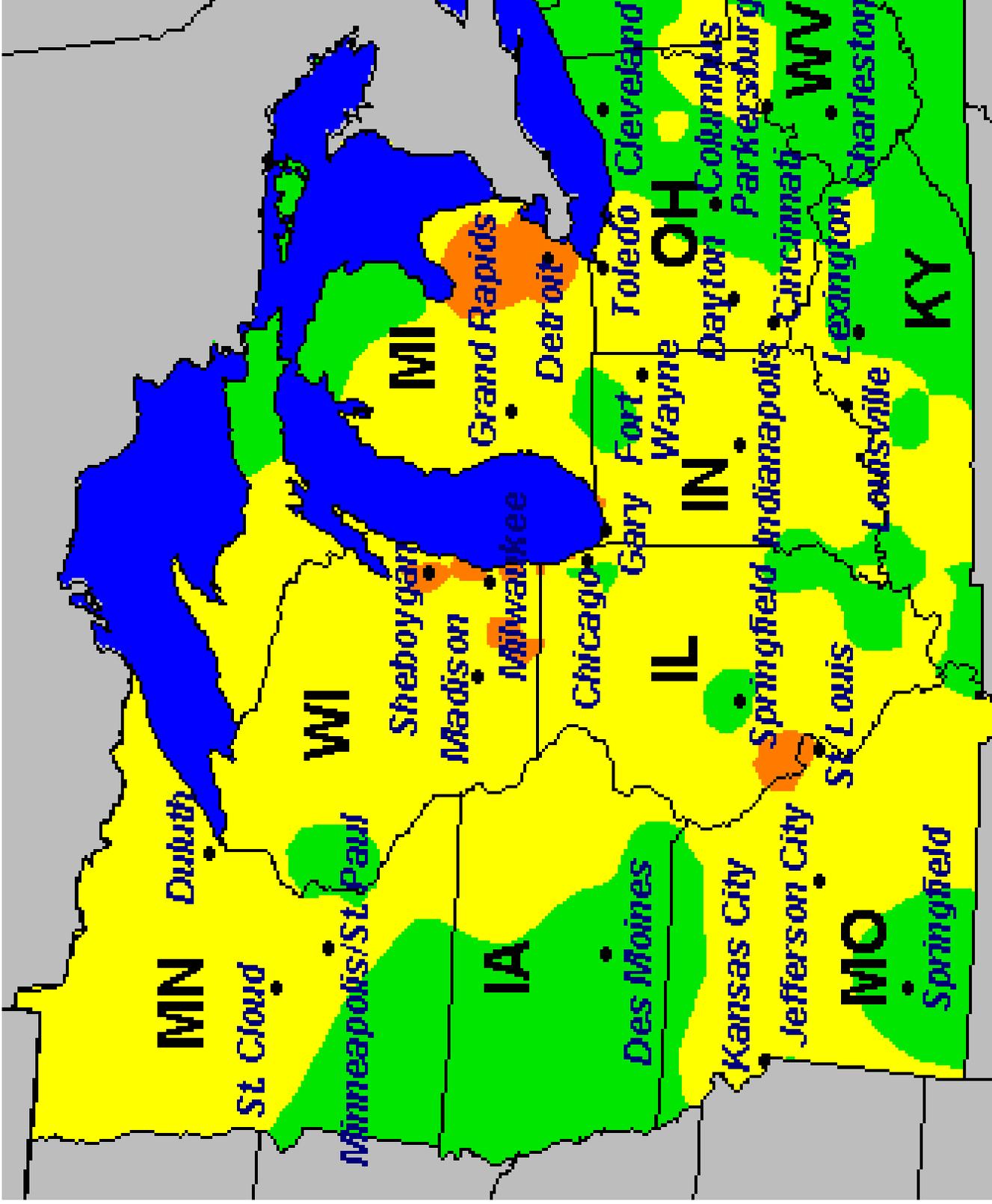
Wisconsin Collar Counties NAAQS 8-hour Ozone Standard Analysis

Modeled Impacts of Zero-Out emission reductions (NO_x and VOC) from the non-Lake Shore Counties ranging from Rock County through Brown County through Brown County and including the Dane Co and Fox Valley regions compared to AIRNOW 8-Hour Maps



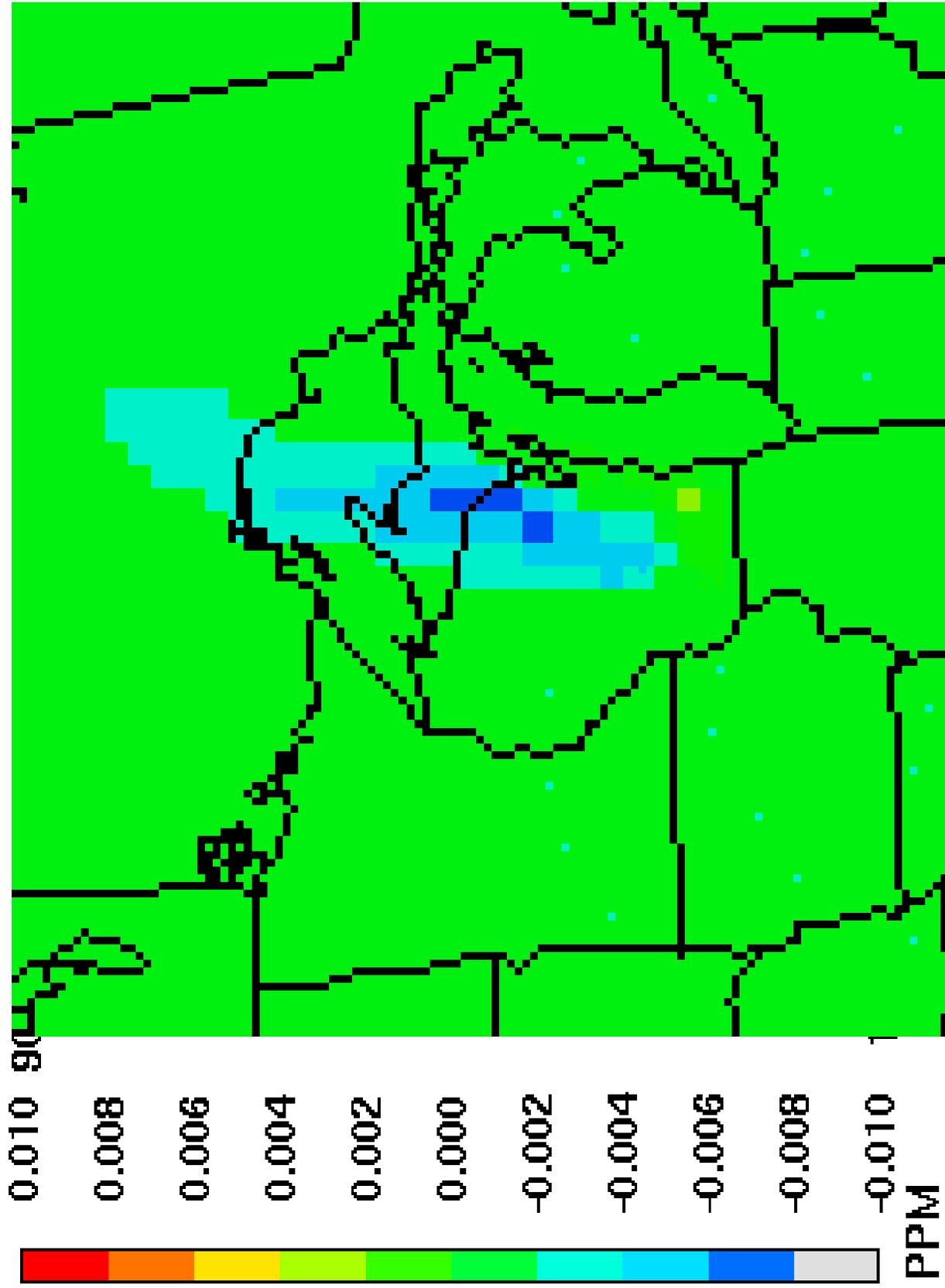
Counties Include:

- Brown
- Calumet
- Columbia
- Dane
- Dodge
- Fond du Lac
- Jefferson
- Outagamie
- Rock
- Walworth
- Washington
- Waukesha
- Winnebago



June 25, 2001

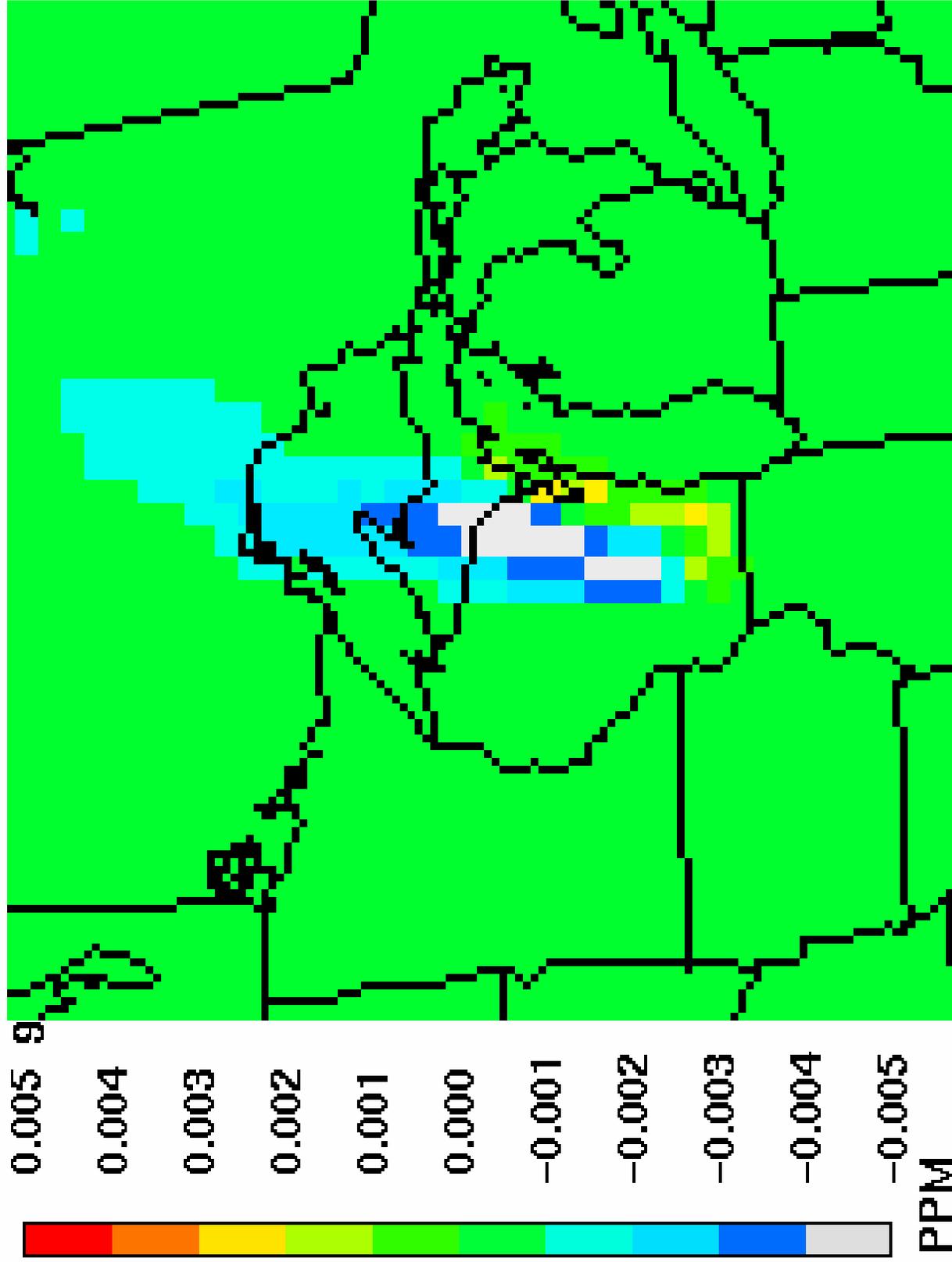
a=2001176.4pos.36.14.WI_zeroALL.ld.camx.avrg, b=2001176.4pos.36.14.baseD.ld.camx.a



June 25, 2001 0:00:00

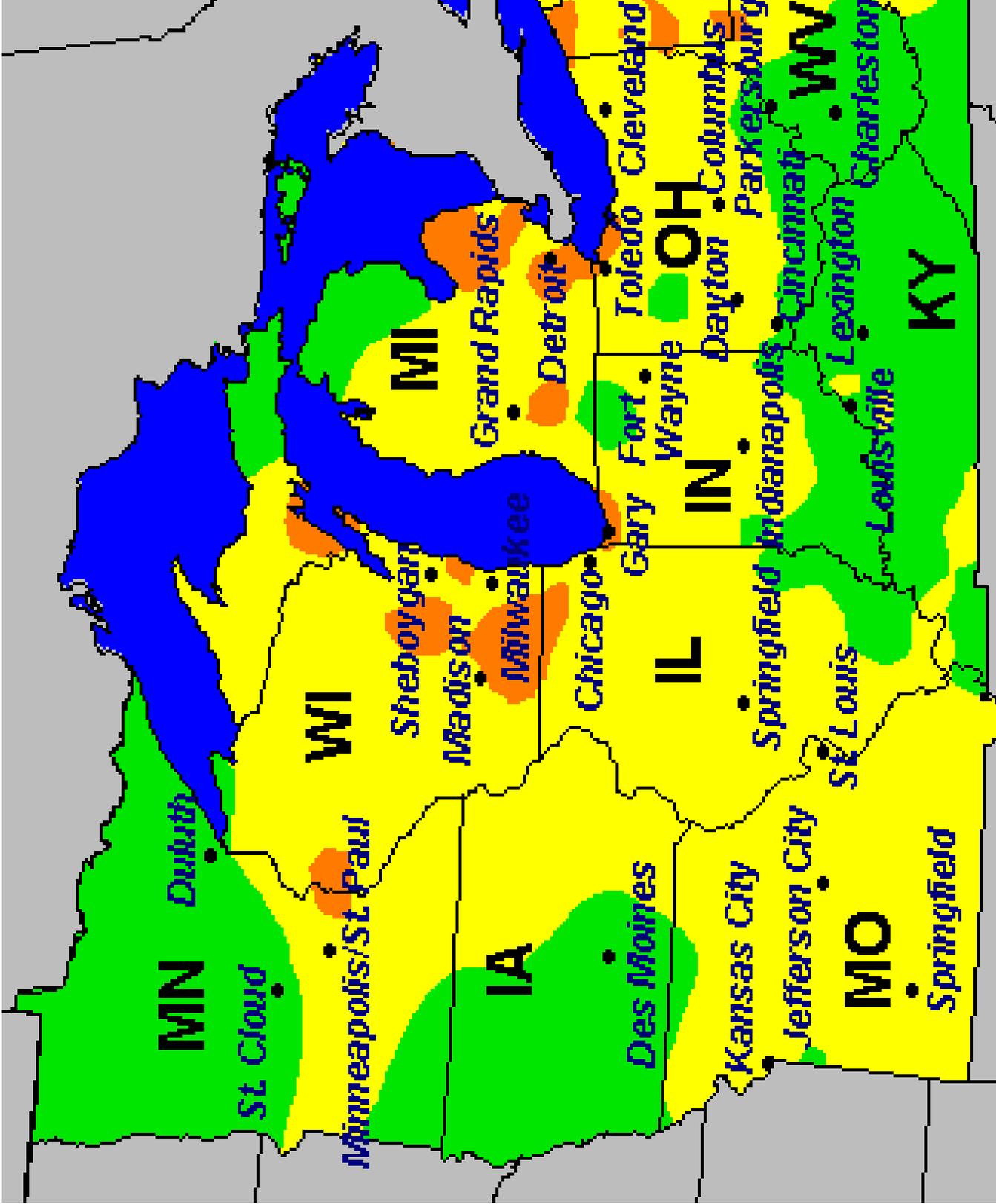
Min= -0.007 at (45,63), Max= 0.003 at (45,56)

5.4rpos.36.14.WI_zeroNOX.Id.camx.avrg. b=2001176.4rpos.36.14.base



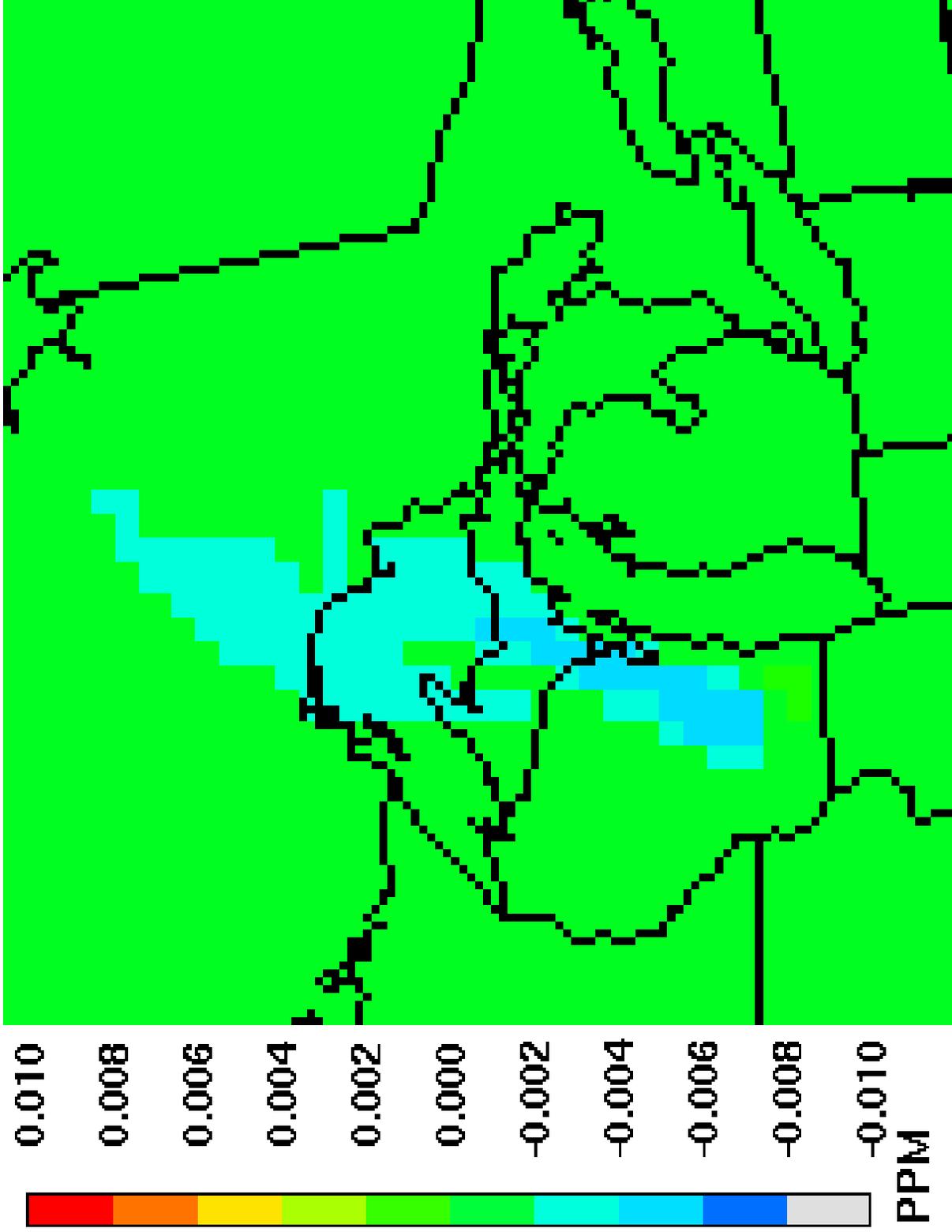
June 25, 2001 0:00:00

Min= -0.005 at (43,59), Max= 0.003 at (45,56)



June 26, 2001

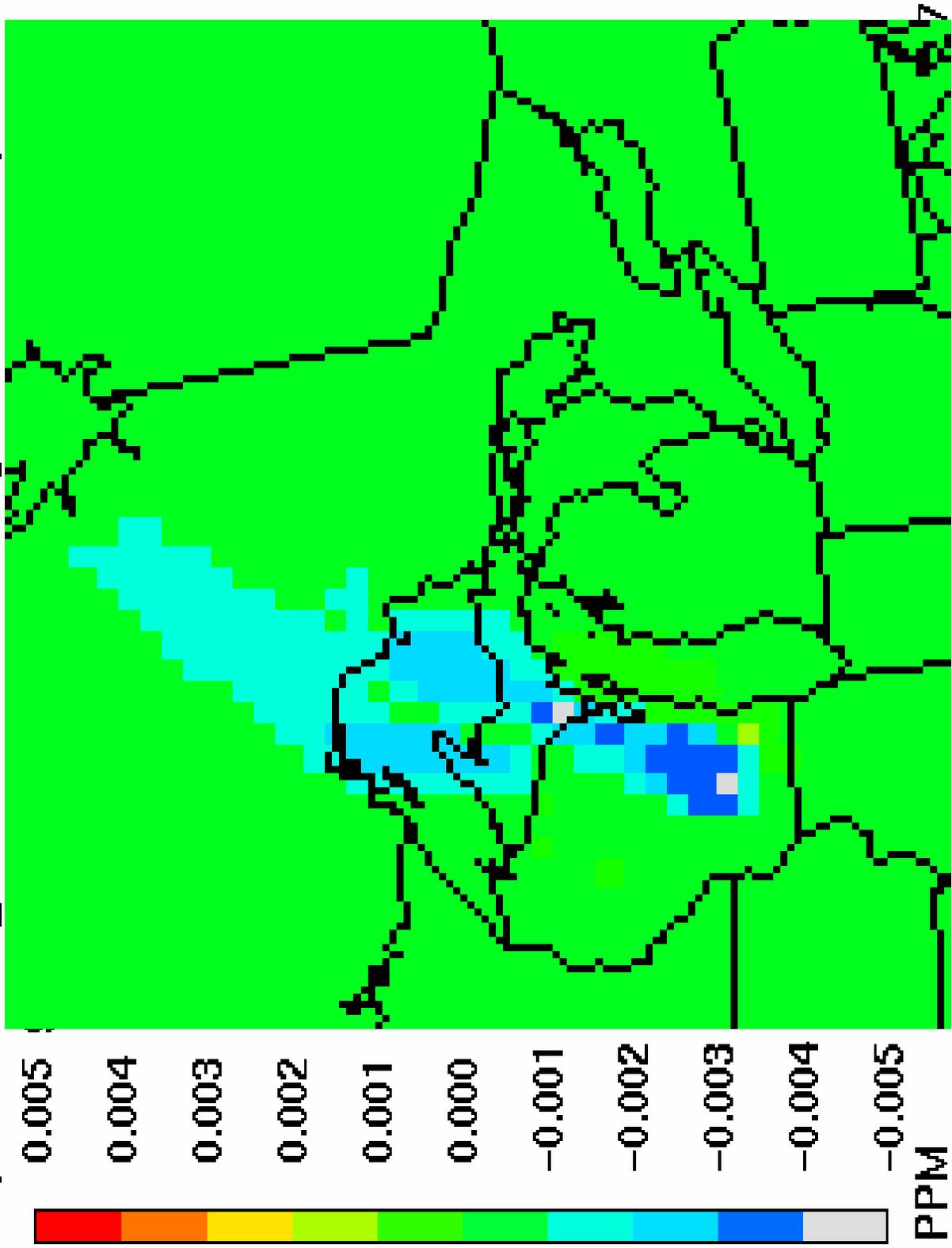
c=2001177_4rpos.36.14.WI_zeroALL.ld.camx.avrg, d=2001177_4rpos.36.14.based.ld.camx.a



June 26, 2001 0:00:00

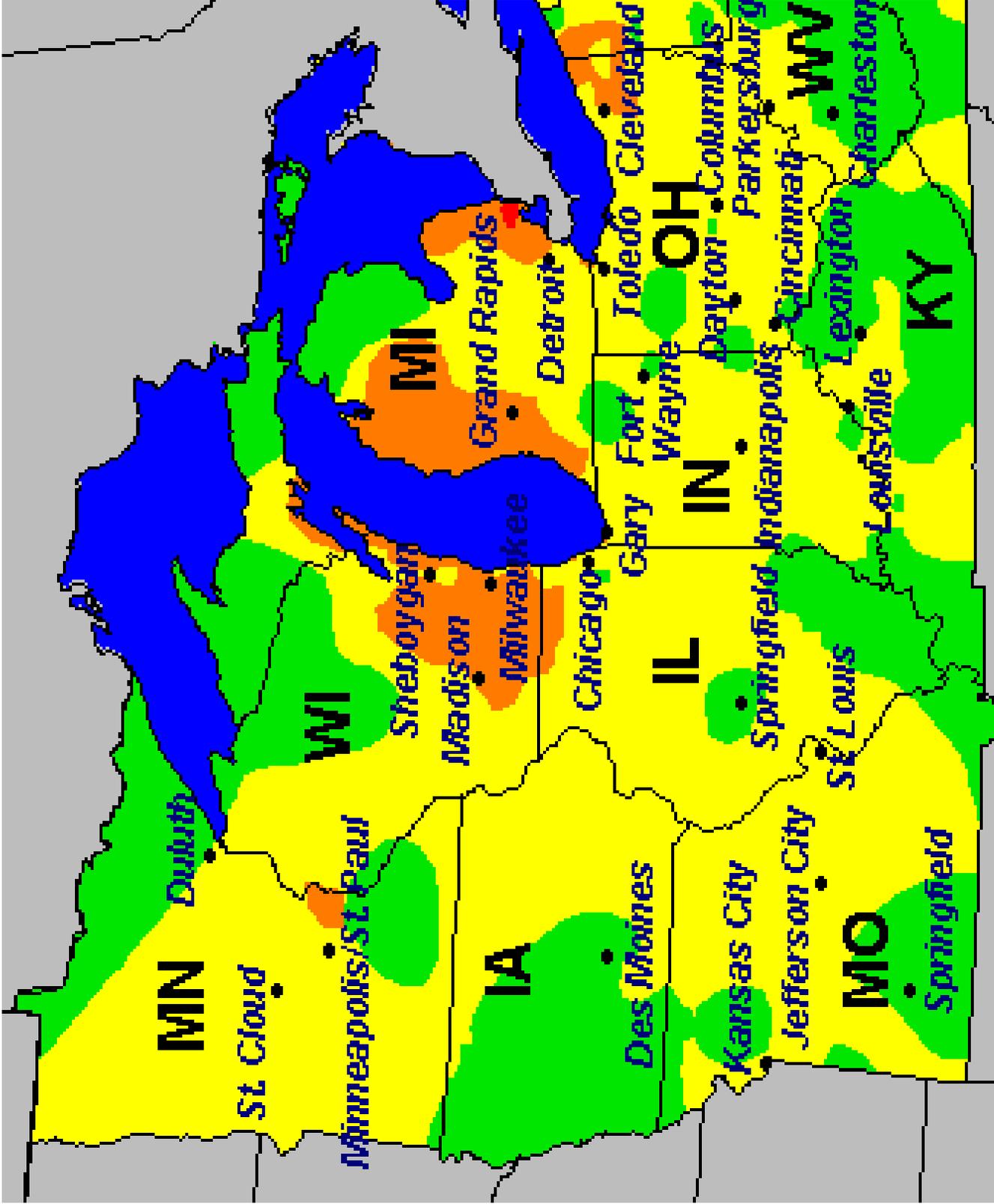
Min= -0.006 at (46,64), Max= 0.001 at (45,56)

7.4rpos.36.14.WI_zeroNOX.Id.camx.avrg, d=2001177.4rpos.36.14.base



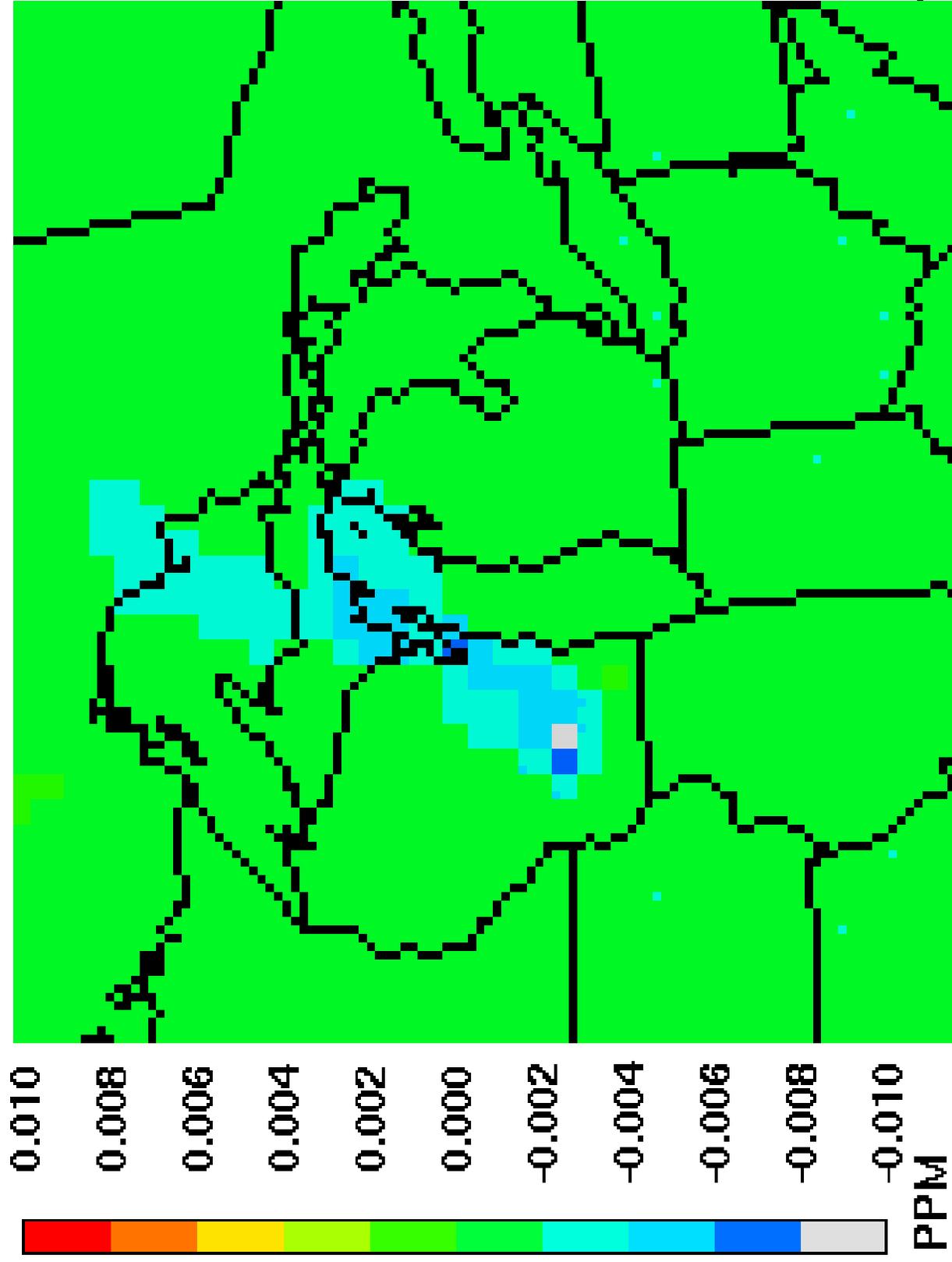
June 26, 2001 0:00:00

Min= -0.004 at (46,64), Max= 0.002 at (45,56)



June 27, 2001

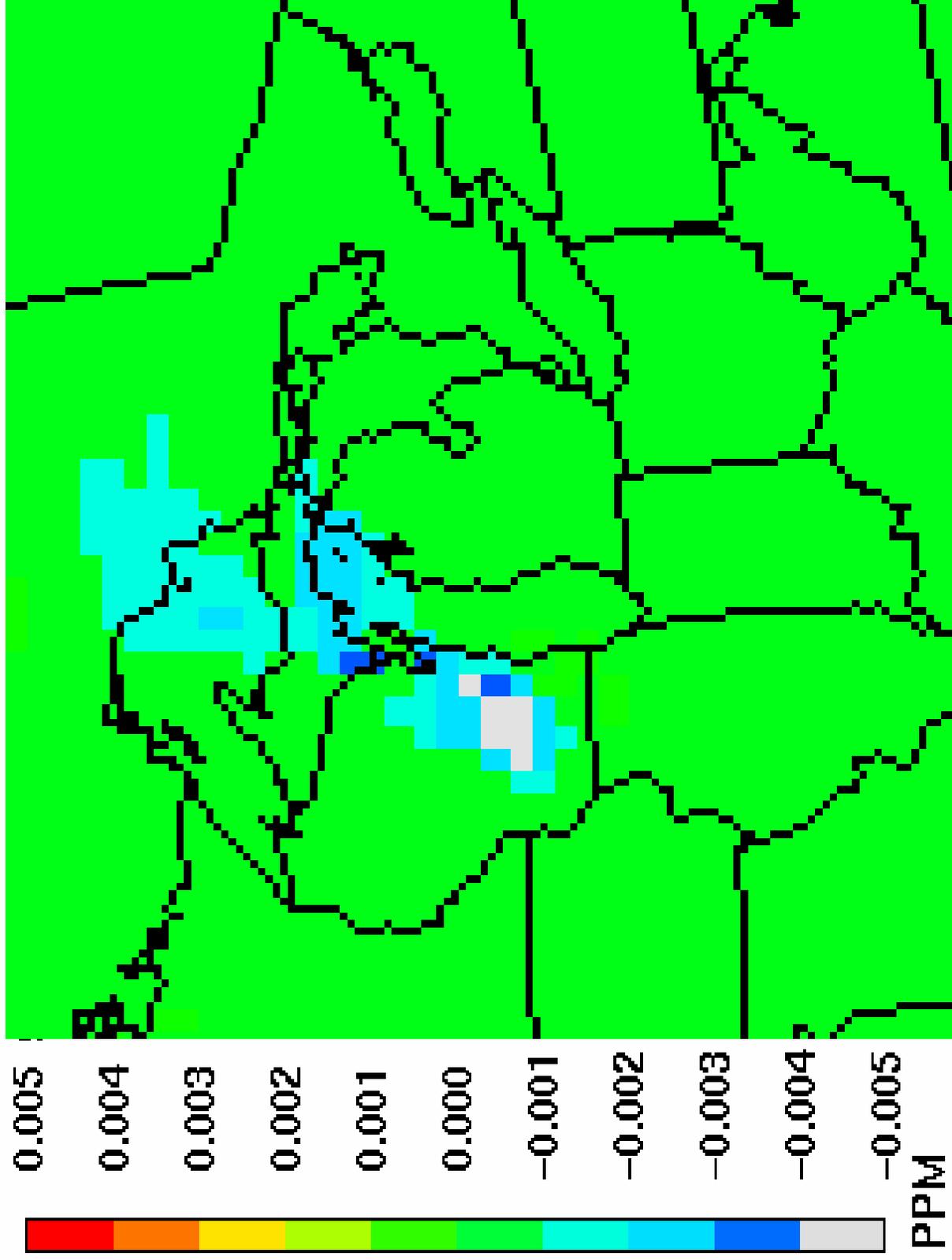
e=2001178.4rpos.36.14.WI_zeroALL.ld.camx.avrg, f=2001178.4rpos.36.14.baseD.ld.ca



June 27, 2001 0:00:00

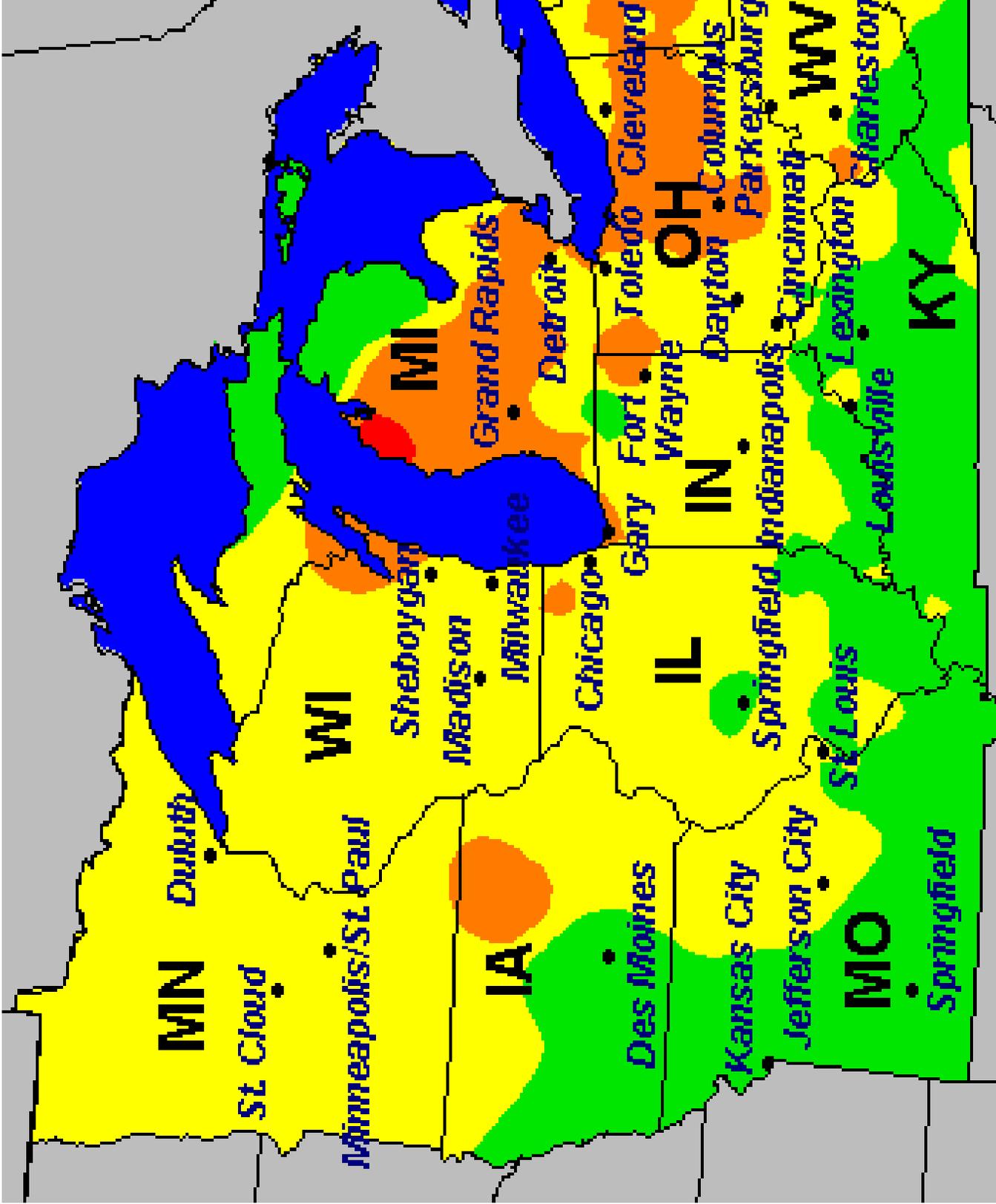
Min= -0.009 at (43,57), Max= 0.000 at (45,55)

8.4rpos.36.14.WI_zeroNOX.Id.camx.avrg, f=2001178.4rpos.36.14.base



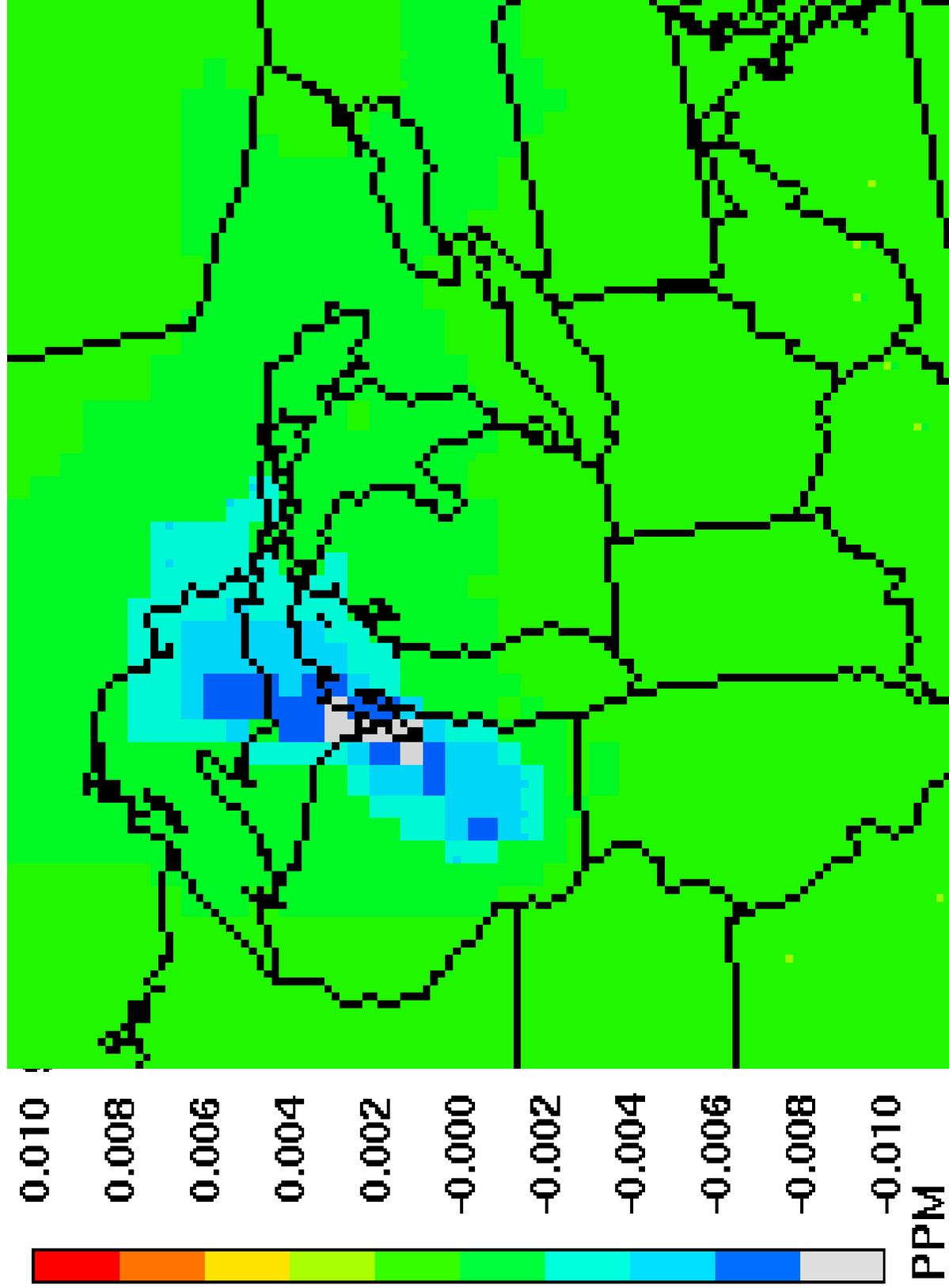
June 27, 2001 0:00:00

Min= -0.008 at (43,57), Max= 0.001 at (45,55)



June 28, 2001

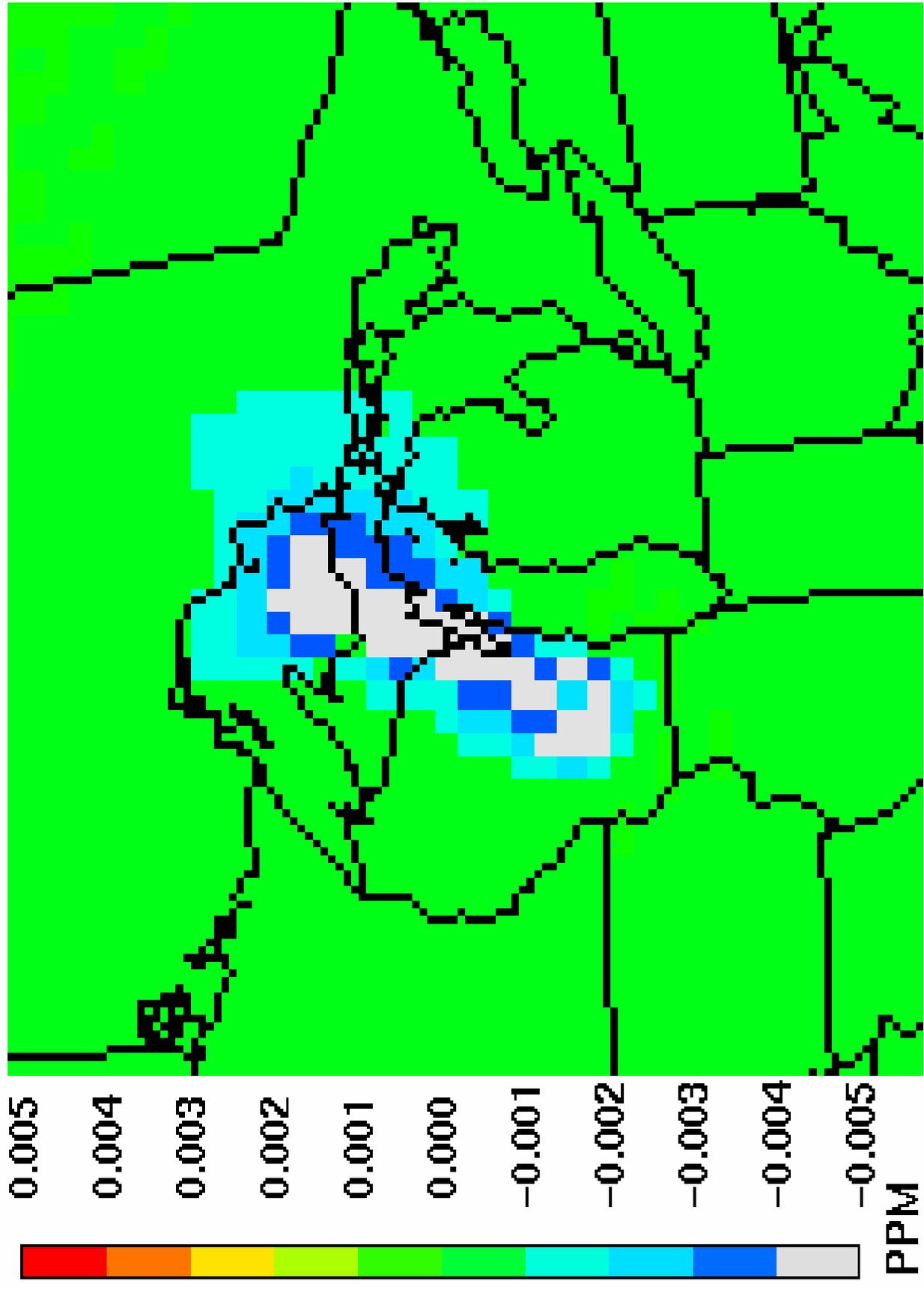
g=2001179.4rpos.36.14.W1_zeroALL.ld.camx.avrg, h=2001179.4rpos.36.14.based.ld.camx.a



June 28, 2001 0:00:00

Min= -0.010 at (46,62), Max= 0.000 at (47,57)

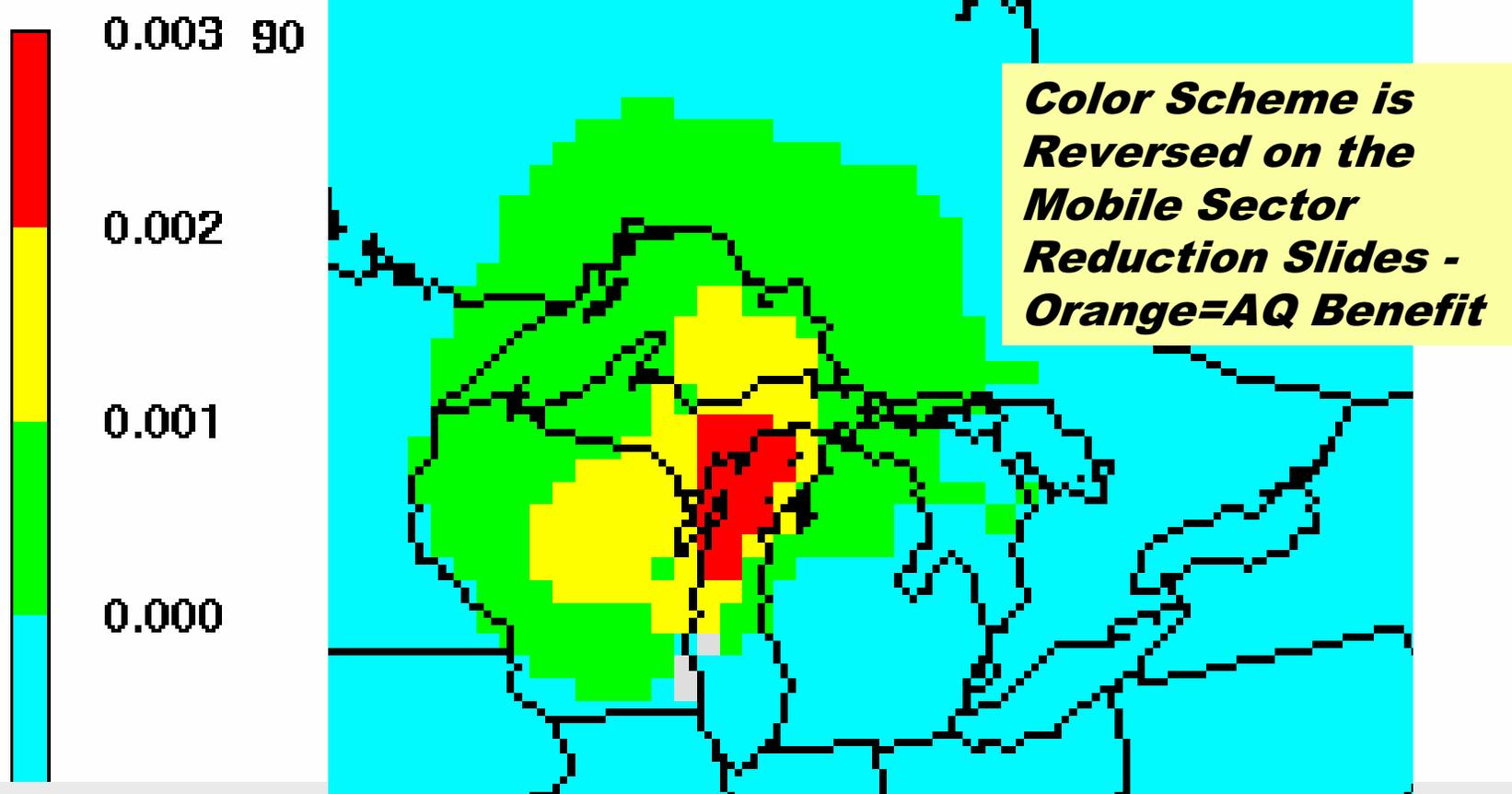
9.4rpos.36.14.wl_zeroNUX.1d.camx.avrg, n=2001179.4rpos.36.14.dast



June 28, 2001 0:00:00

Min= -0.007 at (46,61), Max= 0.001 at (47,57)

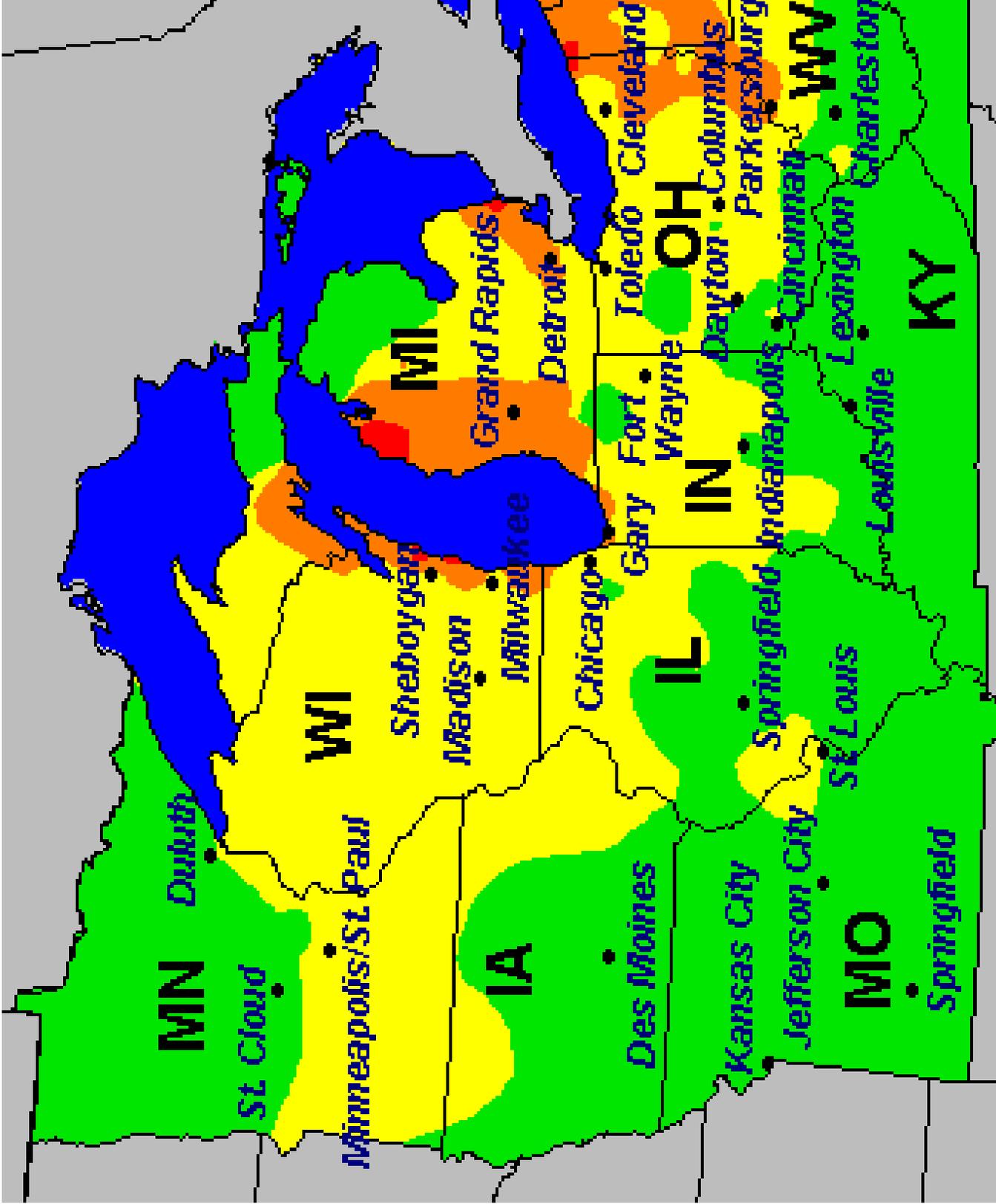
1179.4rpos.36.14.baseD.ld.camx.avrg, h=2001179.4rpos.36.14.wi40.



...and visualizing pollutant emissions impacts....here from mobile sector reductions of 40%

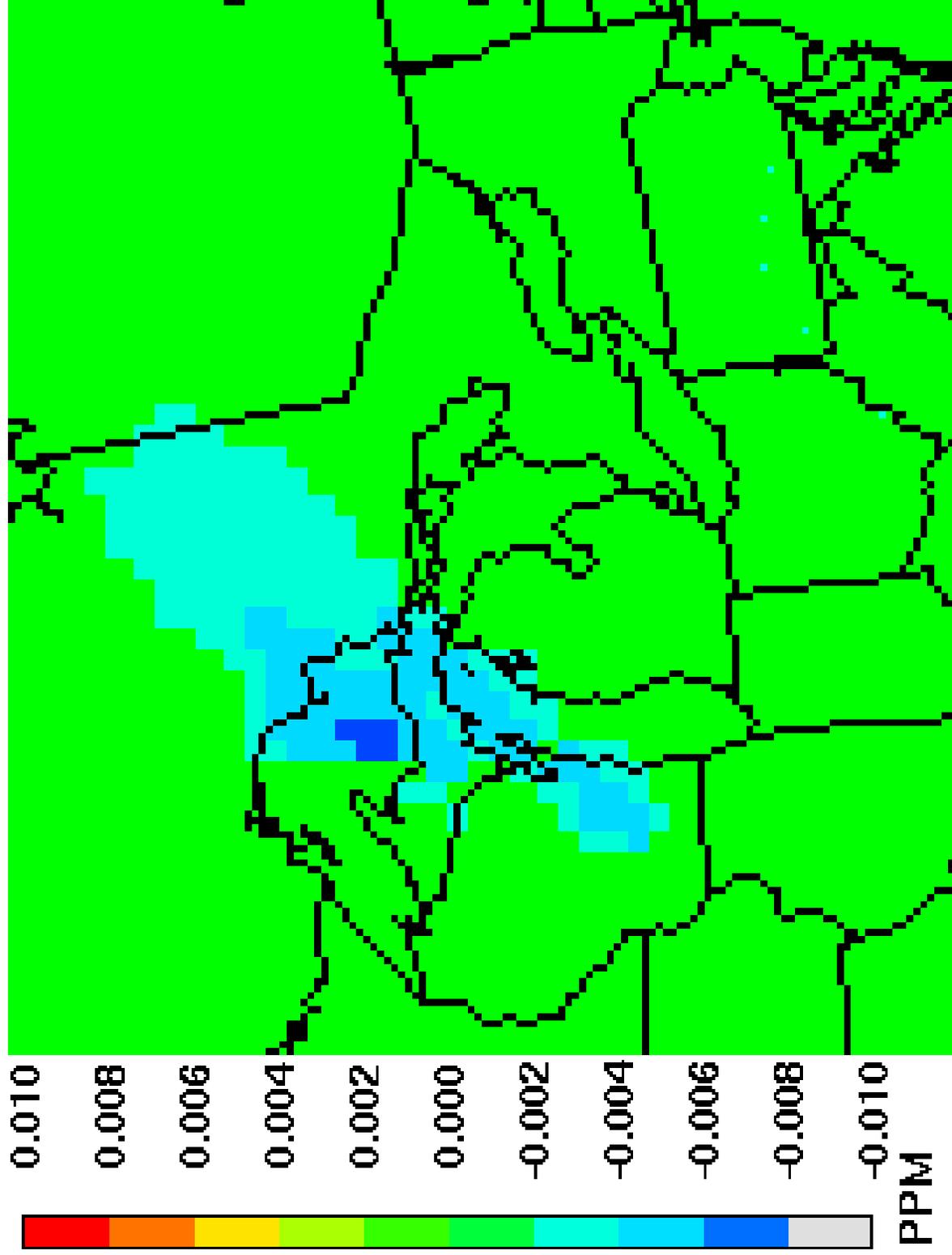
June 28,2001 0:00:00

Min= -0.002 at (46,56), Max= 0.003 at (48,63)



June 29, 2001

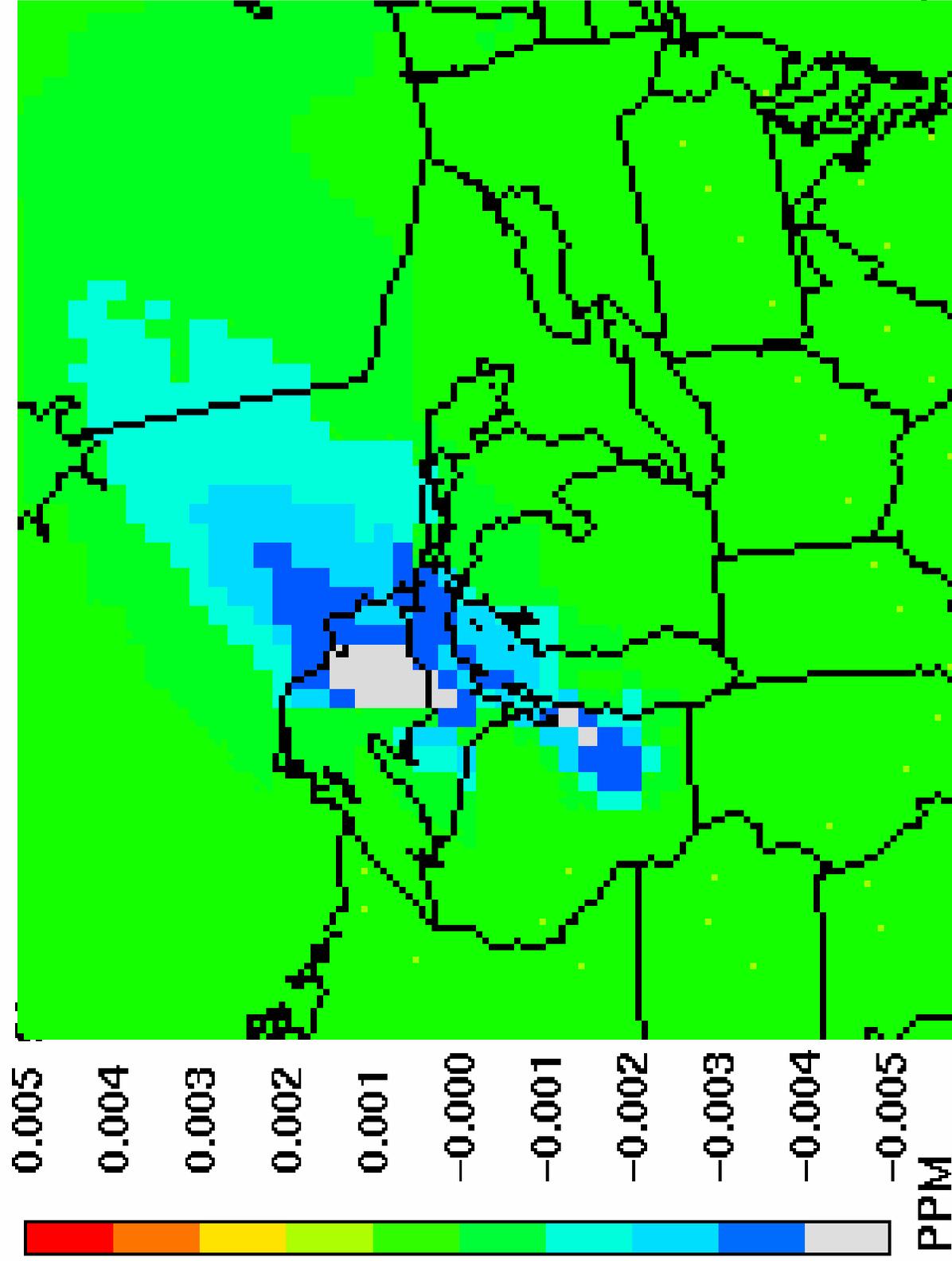
i=2001180.Arpos.36.14.WI_zeroALL.ld.camx.avg,j=2001180.Arpos.36.14.baseD.ld.camx.a



June 29, 2001 0:00:00

Min= -0.007 at (48,69), Max= 0.000 at (44,62)

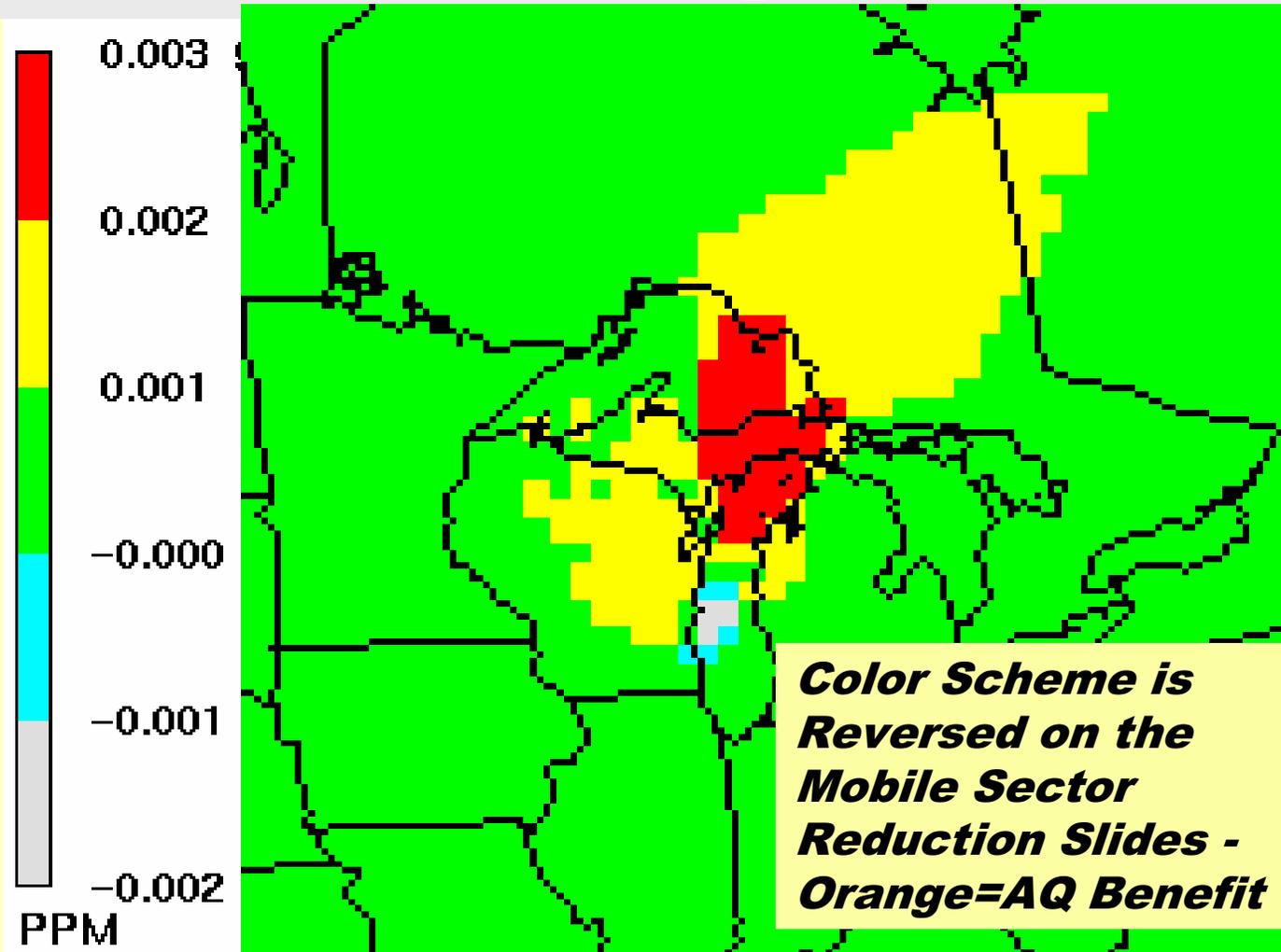
0.4rpos.36.14.WI_zeroNOX.ld.camx.avrg,j=2001180.4rpos.36.14.base



June 29, 2001 0:00:00

Min= -0.005 at (48,69), Max= 0.001 at (48,59)

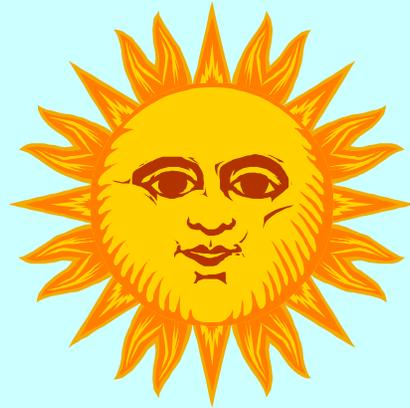
Example - WI Vehicle Pollutant Emissions Footprint



June 29, 2001 0:00:00

Min= -0.002 at (47,58), Max= 0.003 at (48,63)

5 Minute Break, then



*Setting the area designation
sideboards,...peeking at EPA's
Implementation Plan ... and Gathering
Initial Perspectives.*